FLIGHT
The AIRCRAFT ENGINEER & AIRSHIPS

First Aero Weekly in the World

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport

OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM

No. 876. (No. 41, Vol. XVII.) OCTOBER 8, 1925 [Weekly, Price 6d. Post free, 7d.

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The Aircraft Engineer and Airships

Editorial Offices: 36, GREAT QUEEN STREET, KINGSWAY, W.C. 2.
Telegrams: Truditur, Westcent, London. Telephone: Gerrard 1828.

Annual Subscription Rates, Post Free
United Kingdom .. 30s. 4d. Abroad .. .. 33s. 0d.*
These rates are subject to any alteration found necessary under abnormal conditions and to increases in postage rates
* *Foreign subscriptions must be remitted in British currency*

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DIARY OF FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in the following list :—

1925

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Oct. 10	....	Pulitzer Trophy, Long Island, U.S.A.
Oct. 10	....	28 Squadron (R.A.F.) Re-union.
Oct. 15	....	Maj. C. K. Cochran-Patrick, D.S.O., M.C. "Aircraft Survey in Burma," before R.Ae.S.
Oct. 16	....	Sir Samuel Hoare at Lincoln Guildhall Meeting.
Oct. 24	....	Schneider Cup Race, Baltimore, U.S.A.
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Oct. 28	....	Coppa del Mare, Naples.
Oct. 29	....	Mr. W. L. Cowley. "Aircraft Transport Economy," before R.Ae.S.
Nov. 4	....	Group-Capt. W. F. MacNeece. "The General Principles of Air Defence," before Royal United Service Institution.
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Nov. 11–14		Eliminating Trials for Coppa d'Italia, Rome.

EDITORIAL COMMENT.

BY a curious coincidence the publication of the Annual Report of the Directorate of Civil Aviation and the presentation of the first paper of the new session of the Royal Aeronautical Society, written by the Director of Civil Aviation, Major-General Sir Sefton Brancker, and read for him, in his absence, by Major Mayo, took place almost simultaneously. To some extent the two covered the same ground, although Sir Sefton's paper naturally deals with many aspects of the question of civil aviation upon which the Annual Official Report does not touch at all.

Civil Aviation

The Annual Report on Civil Aviation is, in a way, a disappointing document in so far as the statistics show in every case, except the amount of cargo carried, a considerable decrease on the previous year's figures. We are here referring to Table A in the Report, which deals with British Civil Aviation, and with that part of it commonly referred to as commercial, *i.e.* not including "joy riding," etc. The latter, incidentally, shows a very healthy increase, both in the number of machine-flights, in the machine-mileage, and in the number of passengers carried.

If one takes the table dealing with the statistics for the Cross-Channel services, both British and foreign, it is found that the number of British flights is approximately the same as during the previous year, while there is a slight decrease in the number of passengers carried. There is a slight increase in the number of French flights, *i.e.* from 993 to 1,355, and a vast increase in the number of passengers carried by French aircraft, which has grown from 2,107 during the year ending March 31, 1924, to 5,645 during the year ending March 31, 1925. These figures are significant, and we are afraid that if statistics were available up to the end of September, for instance, the results would be found to be even more unfavourable to British aviation, due mainly to the decrease in the number of machines in regular use by Imperial Airways, during the last six months or so. Of the Cross-Channel

services the percentage of flights made by British aircraft to the total made by all nations operating on the Cross-Channel lines has decreased from 58 per cent. to 57 per cent., and the percentage of passengers carried is much more unfavourable, being now only 58 per cent. of the total as compared with 79 per cent. during the year ending March 31, 1924.

From a broader international point of view, Table C, which deals with the value of goods imported into the United Kingdom by aircraft and exported from the United Kingdom by aircraft, is more encouraging in so far as in nearly every case very considerable increases are recorded. As in Table A it is pointed out that Imperial Airways, Ltd., contributed 100 per cent. of the goods traffic, it may be assumed, of course (although data is not given) that a considerable proportion of the increase in the value of the goods carried by air, has been due to goods carried in British machines, and this fact, taken in conjunction with the obvious tendency towards greater use of air transport for the carriage of goods, strengthens the belief we have long had that goods carrying, if properly organised, may offer a considerable field for exploitation, and it would seem that the time has come when machines specially designed for the carriage of goods should be put into service. Fortunately, those responsible for the policy of civil aviation appear to realise this, as it is stated that machines have been, or are about to be, ordered in which a high pay load per horse-power is being aimed at, but the cruising speed of which need not be anything like as high as that of machines used for passenger and mail transport.

It is now some two years ago that FLIGHT suggested that the time had come for producing specialised types of commercial aircraft. Carrying a mixture of mails, passengers and goods in one machine cannot possibly be the best arrangement, and hitherto we have been far too prone to be content with this heterogeneous arrangement of our loads, but if civil aviation is to become a real success there can, we think, be no doubt that machines must be specially designed for the purpose for which they are intended. Thus at the upper end of the scale we shall possibly have a very fast air-mail 'plane whose pay load, although, of course, it should be as high as possible, can be reduced in order to get performance; and owing to the compact nature of mails, a cargo of a given weight could, of course, be carried in a very much smaller space than the equivalent weight made up by passengers. This would logically seem to mean that air-mail machines could be designed with very considerable aerodynamic efficiency, and thus have a high performance, which is necessary if the carriage of mails by air is to offer any real saving in time. In his paper Sir Sefton Brancker refers to the mail 'plane, and to the fact that it will in all probability have a considerably higher cruising speed than the passenger-carriers.

The next type of machine will be the passenger aeroplane, and in this safety and comfort will necessarily be the first considerations. There seems to be some fascination or other in the figure 100 m.p.h., and this is the figure which the Director of Civil Aviation considers the minimum for a passenger machine to be used for European air routes. To us it seems that this figure is somewhat high, and we cannot help thinking that it has been arrived at as a result of six years of experience over short cross-Channel routes only. If and when we are going to extend the present services and to make use of night flying, we believe the figure could be considerably reduced without sacrificing the value of the service, and if that is so, a considerable increase in paying load per horse-power should be attainable.

Lastly, we come to the aircraft goods-carrier, and this, as already pointed out, need not be a fast machine, but it must carry a considerable load per horse-power. It is now several years ago that Mr. H. P. Folland, of the Gloucestershire Aircraft Company, designed a goods-carrier in which the rear portion of the fuselage was hinged and when swung outwards exposed the total cross-sectional area of the fuselage for the loading and unloading of goods. Hitherto the idea has not been taken up, but it is obvious that it would be a very great advantage to be able to load bulky goods in this fashion, and the time has now certainly come when some such type should be given more serious consideration. If the statistics published in the Annual Report on Civil Aviation are disappointing, the paper compiled by Maj.-Gen. Sir Sefton Brancker and read before the Royal Aeronautical Society can be said to help not inconsiderably in giving that hope for the future for which there seems to be no basis in the annual Report of the Director of Civil Aviation. In his paper the Director of Civil Aviation made no attempt to minimise our difficulties, and this, we think, is one of the reasons why the paper is of more than ordinary value. Sir Sefton frankly and openly admits the existence of difficulties, but, at the same time he shows how, even in the light of present knowledge, and without drawing too much upon possible future developments, there is good cause to believe that both as regards safety and reliability, as well as from the point of view of economy, considerably better results are in sight. It seems to be mainly a question of incorporating in all future machines such features as have separately proved to assist towards greater reliability and safety. From the list of new aircraft which have been or are about to be ordered, it is evident that the Director of Civil Aviation is fully determined that in the future practical use shall be made of all such various aids to safety and economy, and we therefore look forward with considerably more confidence in the future than is justified merely by past results. There is, we think, an indication that we are at last about to tackle real commercial aviation seriously, although it is scarcely to be expected that by the time the next annual Report of the Directorate of Civil Aviation is published there will be vast improvement to show. We do believe, however, that British civil aviation is just about to turn the corner, and that from now onwards there will be progress to record, possibly slow at first but, we hope and believe, none the less sure.

Coste Back in Paris

M. COSTE, who met with an accident in the Black Forest when flying from France to India—when his fellow pilot, Thiery, was killed—and who was detained by the Germans for flying over German territory without permission, returned to Paris on October 2. The fine of 5,000 marks imposed upon him by Germans has been paid, 3,500 marks having been subscribed by the readers of the *Journal d'Alsace et de Lorraine*, and the remainder of the fine being given by the firms interested in the flight.

FLIGHT

THE THIRD PRAGUE AVIATION MEETING

THE third Prague aviation meeting, an annual event organised by the League of Czechoslovakian Pilots, was held—with some considerable success—at the Kbely Aerodrome, Prague, on September 20. As the Congress of the Fédération Aéronautique Internationale was sitting at this time, many of the members availed themselves of the opportunity of attending the meeting. It is estimated that about 50,000 visitors were present at the aerodrome, amongst whom were Prince Carol of Roumania and Comte de La Vaulx.

An excellent programme was arranged, which included the speed contest for the trophy presented by the President of the Republic, speed contests for machines carrying various loads, and a speed contest for light 'planes. This year the list of entries was exceptionally good, there being 45 machines entered for the various events. The course was arranged over a triangle of 100 kms.—two laps of this course having to be accomplished in the main events.

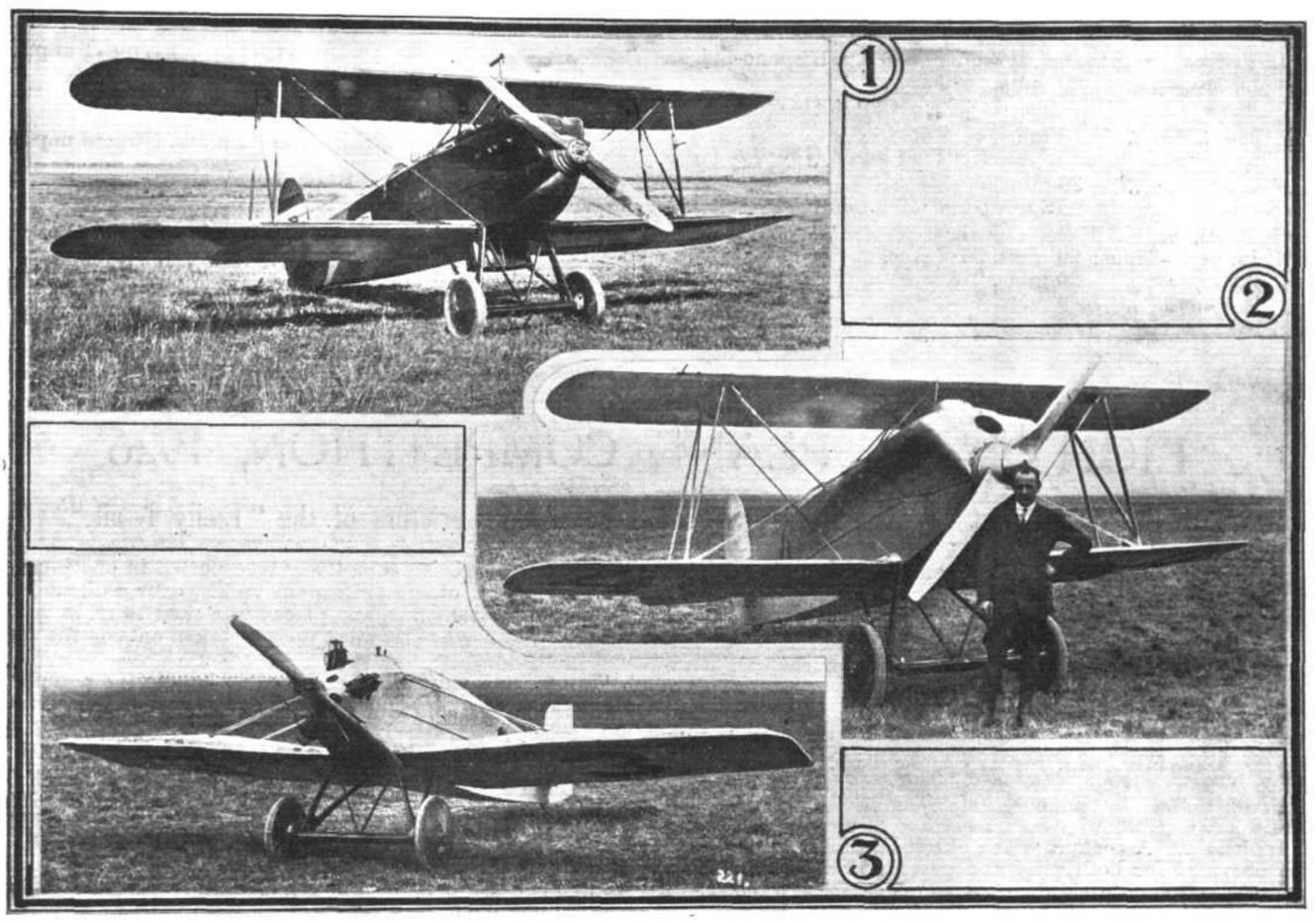
The meeting opened in the morning with the speed contest for machines carrying a load of 500 kgs. In this event the "Aero" A.11 reconnaissance two-seater, fitted with a 240 h.p. Walter engine, secured the first place with a speed of 195·8 km.p.h. (121·4 m.p.h.).

The second event was the speed contest for machines with a load of 250 kgs. This race provided much excitement when the two chief rivals in the contest, Dr. Lhota and Capt. Kalla, were flying. Dr. Lhota started first, piloting an Avia B.H.21 single-seater fitted with a 300-380 h.p. Hispano-Suiza supercharged engine—this machine, by the way, is a standard production job, being one of a batch delivered to the Army—Capt. Kalla following on a Sm. 20 single-seater fitted with a similar engine but having special wings of smaller span and area.

In the first lap there was little difference in speed between the two, although the B.H.21 was perhaps slightly faster. The second lap, however, was decisive in favour of Dr. Lhota, who won a whole minute over his rival and finished the race with an average speed of 258 km.p.h. (160 m.p.h.), Capt. Kalla's speed being 251 km.p.h. (155·6 m.p.h.). Third place was obtained by the pilot Merhout on another Avia B.H.21 fitted with a 300-h.p. Hispano-Suiza engine—a standard single-seater pursuit 'plane drawn from the Army air service—with a speed of 239 km.p.h. (148 m.p.h.). Incidentally, Dr. Lhota established in this race national records in this class (250 kgs.) for the 100 and 200 kms.

At 2 p.m. the light 'planes had their innings. The entries were all of the Avia monoplane type, single and two-seater, fitted with 60 h.p. Walter engines. In this event Capt. Hamšik on the B.H.10 school machine secured first place with a speed of 171·14 km.p.h. (106 m.p.h.). Pilot Bican, on a similar machine, made much faster time—181 km.p.h. (112 m.p.h.)—but he was disqualified for rounding one of the marks in a way which in the opinion of the observers did not comply with the rules. Second place was secured by Pilot Janhuber with 163·5 km.p.h. (101·37 m.p.h.), while Pilot Bartos was third with 163·48 km.p.h. (101·35 m.p.h.)—only 9 secs. behind.

After this a start was made with the event of the day, the "President's Race." The low limits for this contest were 260 km.p.h. for the trophy, and 270 km.p.h. for the prize of 100,000 kr. Two Avia B.H.21 machines opened the race, followed by Pilot Béleš on the S.8 racer, a fine machine fitted with a 450 h.p. Napier "Lion" engine. After Béleš finished his first lap with 291 km.p.h. (180·4 m.p.h.) to his credit, Pilot Fritsch started on the Avia B.H.21 R—a single-seater racer with special wings of reduced span and area, and fitted with 300/380 h.p. Hispano-Suiza engine driving direct a Reed metal airscrew and provided with Lamblin radiators. He came back again, however, after a few minutes, and landed for engine adjustments. While these were being effected, Béleš completed the course with a speed of 295 km.p.h. (183 m.p.h.).



THE THIRD PRAGUE AVIATION MEETING: Three successful competing machines. 1. The Avia B.H.21 (300/380 h.p. Supercharged Hispano-Suiza), which won the 200-km. speed contest with 250 kgs. load. 2. The Avia B.H.21 R (300/380 h.p. Hispano-Suiza) racer and Pilot Fritsch, winners of the "President's Race." 3. One of the Avia B.H.10 monoplanes (60 h.p. Walter) which took part in the Sport 'plane race.

Eventually, Fritsch started off again once more, and covered the first lap at nearly 300 k.p.h. (186 m.p.h.), and then entering on his second lap with a steeply-banked turn, improved his speed so that he averaged for the second 100 kms. over 301 k.p.h. (186·6 m.p.h.). Thus, his speed for the full 200 kms. was 300·59 k.p.h. (186·36 m.p.h.). At the conclusion of the race, Fritsch received many congratulations on his splendid performance, especially from the designers of the machine, Mr. Benes and Mr. Hajn. The successes of the Avia machines in this meeting were remarkable. In the morning, Dr. Lhota came very close to the world record for 250 kgs., while Fritsch's victory in the afternoon, in the President's Race, apart from being a national record, compared very favourably with the world record for the same class established recently by Sadi Lecointi, who, flying a machine fitted with 500/600 h.p. engine, averaged 313 k.p.h. (194 m.p.h.).

The results of the chief events were as follows :—

"President's Race."

1. Fritsch, on Avia B.H.21.R. (300/380 h.p. Hispano-Suiza).
   1st lap.—Time : 20 mins. 0·6 secs.
   Speed : 299·85 k.p.h. (181·9 m.p.h.).
   2nd ,, ,, 19 mins. 54·7 secs.
   Speed : 301·33 k.p.h. (186·8 m.p.h.).
   200 kms. ,, 39 mins. 55·3 secs.
   Speed : 300·59 k.p.h. (186·3 m.p.h.).
2. Béleš, on S.8 Racer (450 h.p. Napier "Lion").
   1st lap.—Time : 20 mins. 39·4 secs.
   2nd ,, ,, 20 mins. 2·5 secs.
   200 kms. ,, 40 mins. 41·9 secs.
   Speed : 294·884 k.p.h. (182·8 m.p.h.).
3. Lieut. Hess, on Avia B.H.21 (300 h.p. Hispano-Suiza).
   1st lap.—Time : 24 mins. 7·4 secs.
   2nd ,, ,, 24 mins. 11·8 secs.
   200 kms. ,, 48 mins. 19·2 secs.
   Speed : 248·344 k.p.h. (153·9 m.p.h.).

Speed Contest with 250-kgs. load.

1. Dr. Lhota, on Avia B.H.21 (300/800 h.p. Hispano-Suiza).
   100 kms.—Speed : 260·8 k.p.h. (161·7 m.p.h.).
   200 ,, ,, 258·08 k.p.h. (160 m.p.h.).
2. Capt. Kalla, on S.20 (300/880 h.p. Hispano-Suiza).
   200 kms.—Speed : 251·04 k.p.h. (176·4 m.p.h.).
3. Merhout, on Avia B.H.21 (300 h.p. Hispano-Suiza).
   200 kms.—Speed : 239·520 k.p.h. (148·5 m.p.h.).

Sport 'Plane Speed Contest.

1. Hamsik, on Avia B.H.10-School (60 h.p. Walter).
   Time (200 kms.) : 1 hr. 10 mins. 6·8 secs.
   Speed : 171·14 k.p.h. (106·1 m.p.h.).
2. Janhuber, on Avia B.H.10 (60 h.p. Walter).
   Time (200 kms.) : 1 hr. 13 mins. 23 secs.
   Speed : 163·52 k.p.h. (101·38 m.p.h.).
3. Bartos, on Avia B.H.10 (60 h.p. Walter).
   Time (200 kms.) ; 1 hr. 13 mins. 32·8 secs.
   Speed : 163·48 k.p.h. (101·35 m.p.h.).
4. Cinibulk, on Avia B.H. 11—2-seater (60 h.p. Walter).
   Time (200 kms.) : 1 hr. 15 mins. 29·3 secs.
   Speed : 158·96 k.p.h. (98·5 m.p.h.).

LIGHT AEROPLANE COMPETITION, 1926

For Prizes Amounting to £5,000 Presented by the Proprietors of the "Daily Mail."

Preliminary Announcement

THE competition is open to any aeroplane, the weight of the engine of which does not exceed 170 lbs.

Note.—The weight of the engine includes carburettor and induction system, complete ignition equipment, air-screw hub and fastenings, exhaust pipes (if any) and radiator, pipes and water (if any).

Two-seater Dual Control.—The aeroplane must be a two-seater fitted with dual control, and an air-speed indicator must be visible from either seat. The heads of the pilot and passenger must not be enclosed. The seating and controls must be capable of accommodating a normal person of 6 ft. height. A cockpit width of not less than 24 ins. must be provided for both pilot and passenger. The top of the control column should be free to move in a fore-and-aft direction through a distance of not less than 15 in. The distance between the seats of the pilot and passenger must not exceed 5 ft.

British Manufacture.—The aeroplane, including the engine and ignition system, must have been designed and constructed in the British Empire.

Fuel.—The ingredients of the fuels used must be commercially obtainable in bulk.

Competitors.—The entrant and pilot must be British subjects.

Load to be Carried.—The load to be carried, exclusive of fuel and oil, must be made up to 340 lbs. This includes the weight of the pilot and passenger (if carried). If there is no passenger the balance of the total weight required must be carried in the spare seat. This weight may be increased until the total weight of the aeroplane is that specified by the Certificate of Airworthiness.

The carrying of a passenger is optional except in the eliminating test "B," in which case it is not permitted.

Eliminating Tests

The following eliminating tests A, B, C, and D must be carried out in this order, and must be passed to the satisfaction of the officials before taking part in the competition proper :

A. Dismantling, Housing and Re-erecting.—For this test the aeroplane must be presented to the officials fully erected.

It must then be dismantled or folded in such a manner as to permit of its being completely transported in one journey without the use of any extraneous tackle, over a distance of not more than 25 yards, and placed in a shed 10 ft. in width and 10 ft. in height. It must then be taken outside the shed and re-erected.

Two persons only will be allowed to handle the aeroplane throughout this test, and the time occupied must not exceed one hour.

No special devices will be allowed unless carried as part of the equipment of the aeroplane in flight during the competition.

B. Demonstration of Dual Control.—This test will consist of two separate flights of five minutes' duration each, within sight of the aerodrome, at the termination of each of which one figure of eight must be flown within the boundary of the aerodrome.

The pilot must be alone and occupy alternately the two seats in the aeroplane.

C. Getting Off.—This test will consist of a take-off, starting from rest and flying in a straight line over two barriers 25 ft. high and placed 25 yards apart. The distance from the starting point to the first barrier will be 250 yards. This distance is based on a wind not exceeding six miles per hour.

D. Pulling Up.—This test will consist of a straight landing over a barrier 6 ft. high. The length of run must not exceed 100 yards. This distance is based on a wind not exceeding six miles per hour.

Competition

The competition will consist of a flight over a course of approximately 2,000 miles at an average speed of not less than 50 m.p.h.

The course will be divided into at least 20 stages, the longest stage not to exceed 125 miles. Particulars of the course will be announced later.

The first prize of £3,000 will be awarded to the entrant of the aeroplane which carries the greatest useful load per unit of fuel consumed.

The second prize of £1,500 and the third prize of £500 will be awarded respectively to the entrants of the aeroplanes which are placed second and third.

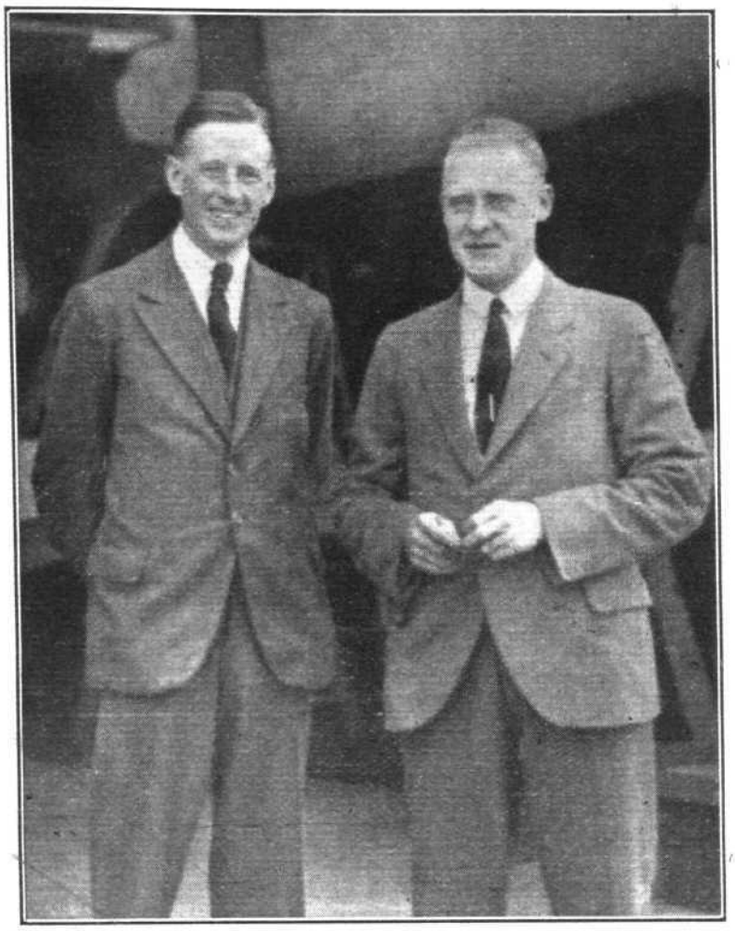
It is proposed to hold the competition during August, 1926, and the exact dates and duration of the competition will be announced later.

FLIGHT

A BRITISH WORLD'S SPEED RECORD

Biard on Supermarine-Napier S.4 Averages 226·752 m.p.h.

So quietly was it done, and so carefully was the secret guarded, that very few people outside the two firms concerned were aware even that an attempt had been made to establish a new world's speed record with a British machine and British engine. It therefore came as somewhat of a surprise—and a very agreeable surprise indeed—when, on October 6, it was announced that at last a world's record, and one of the most highly valued at that, now stands to the credit of Great Britain. The record in question, which has been homologated by the F.A.I., is no less than the world's speed record for seaplanes, and was established by Captain Henri Biard on the Schneider Cup Supermarine-Napier S.4 over Southampton Water on September 13 last, a very short time after the machine had made its first test flights. The new world's speed record for seaplanes shows a surprising increase on the previous record, held by the American pilot, Lieutenant Cuddihy, of the United States Navy, whose average speed over the 3 km. course, established at Baltimore on October 25, 1924, on a Curtiss-Navy racer with Curtiss D.12 engine, was 302·684 km.-hr. (188·118 m.p.h.). Captain Biard's speed over the measured 3 km. course was no less than 364·924 km.-hr. (226·752 m.p.h.), so that the previous record was beaten by a very wide margin, and it is greatly to the credit of Mr. R. J. Mitchell, Chief Engineer and Designer to the Supermarine Aviation Works, that he has, in one leap so to speak, produced a machine capable of so far exceeding the previous best performance of machines produced in America as a result of several years' experience.



BRITISH WORLD'S SPEED RECORD: Our photograph shows Capt. H. C. Biard, pilot of the Supermarine-Napier S.4, and Mr. R. J. Mitchell, designer of the machine.

The full-page photograph of the Supermarine-Napier S.4 on page 653 shows the exceptionally "clean" lines of the machine, and helps to explain how such an increase in performance was possible. What the photograph does not, of course, indicate is the amount of power delivered by the special Napier racing engine, which is a direct descendant of the famous Napier "Lion." At the moment it is not, for obvious reasons, possible to give actual figures relating to the Napier racing engine, but it will be realised that the power must be considerable to permit of such speeds being attained.

In writing of the new British world's record one should not forget to make reference to one other very important factor in the success, *i.e.*, the Fairey-Reed duralumin propeller, without which the direct drive, at the high speeds of revolution at which the Napier racing engine runs, would not have been possible.

The world's speed record is one of the most cherished of all the recognised records, and there will, we feel sure, be general satisfaction with the good news that this envied record now stands to the credit of Great Britain.

Our heartiest congratulations to the Supermarine Aviation Works, the Napier Company, and all connected in any way with this very splendid effort. Surely, the new world's record may be taken as a happy augury for future successes in the Schneider Cup Race.

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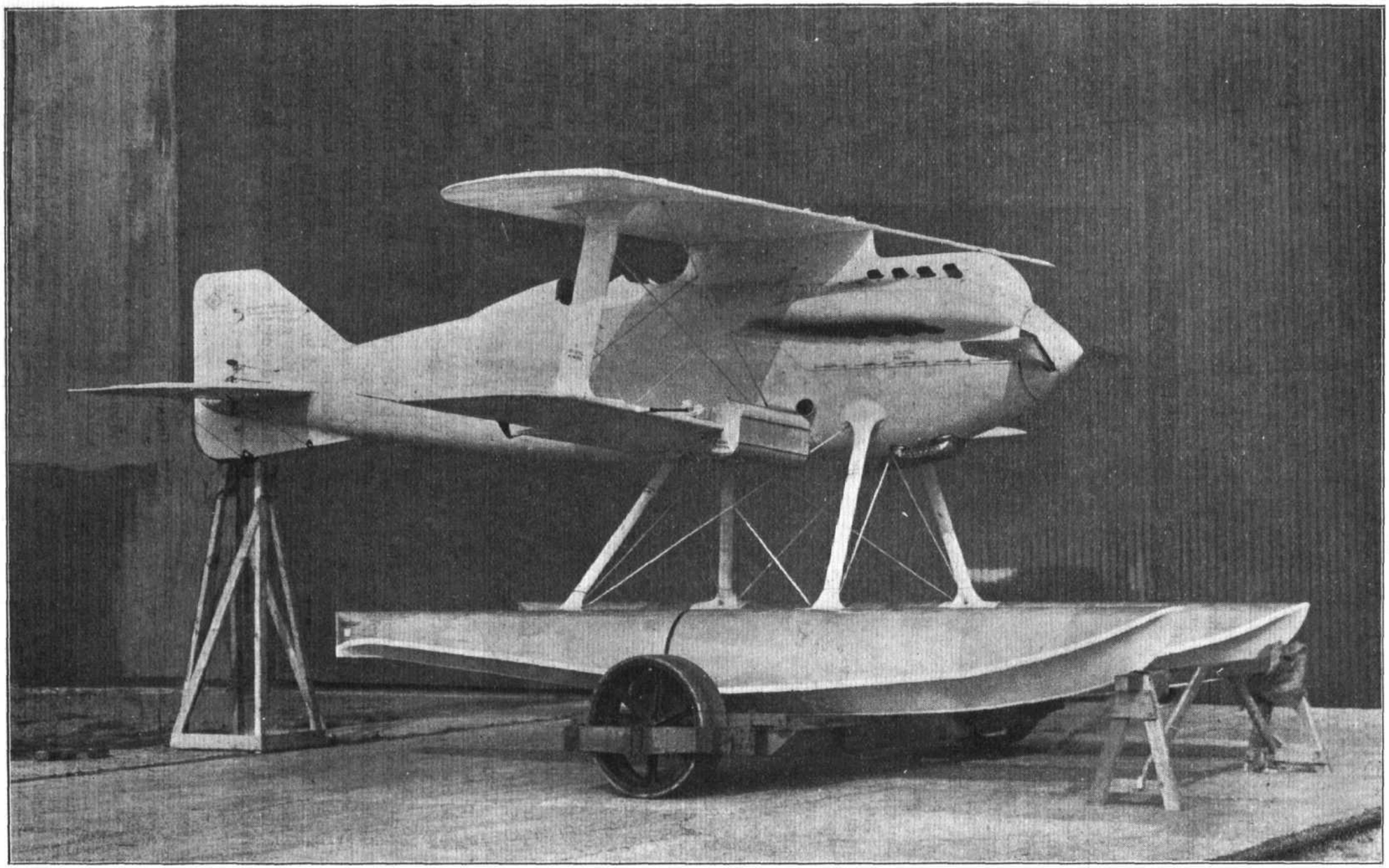
R. 33 Out Again.

Britain's rigid airship, R.33, fitted with a new nose and improved in very many other details, made her first flight since last April's escapade on October 5-6. Leaving the Pulham shed at about 5 p.m., with Major Scott in charge of operations, Flt.-Lieut. H. C. Irwin as Captain, and nearly 40 others on board—including Sq.-Ldr. Booth, First Officer E. L. Johnson, Col. Richmond and experimental party—the airship after a circuit of the aerodrome steered for the coast. The object of the flight was to carry out a series of experimental tests, and during her 19-hour cruise—during which she passed over London on Tuesday morning—the full programme of tests was successfully completed in spite of a slight mishap to the gear box of the aft engine. The R.33 returned to Pulham soon after 11 a.m. on Tuesday, and was safely housed in the shed by noon—owing to the faulty gear box it was decided not to moor the ship to the mast.

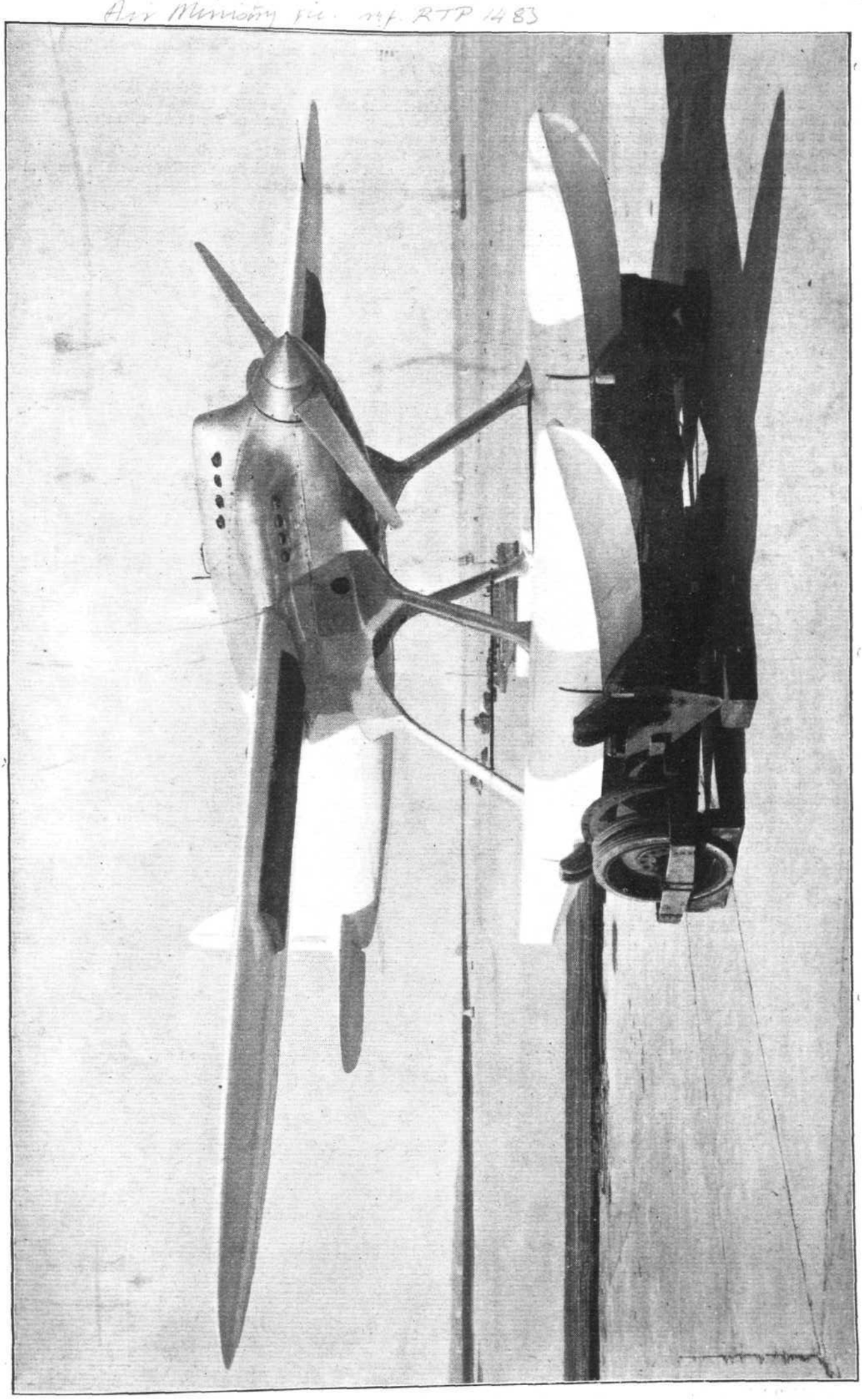
Air Mails Closed

The Postmaster-General announces that Air Mail Route No. 6 (see page 2 of the current Air Mail leaflet) has ceased to be available, and the air mails to Hamburg and Copenhagen (serving Denmark, Norway, Sweden and Finland), hitherto closed in London at 6 p.m., have been discontinued.



THE SCHNEIDER CUP RACE : This official photograph of the Gloster-Napier III gives a very good idea of the general design. Noteworthy features are the very careful streamlining and the small size of the machine in relation to its floats.

FLIGHT



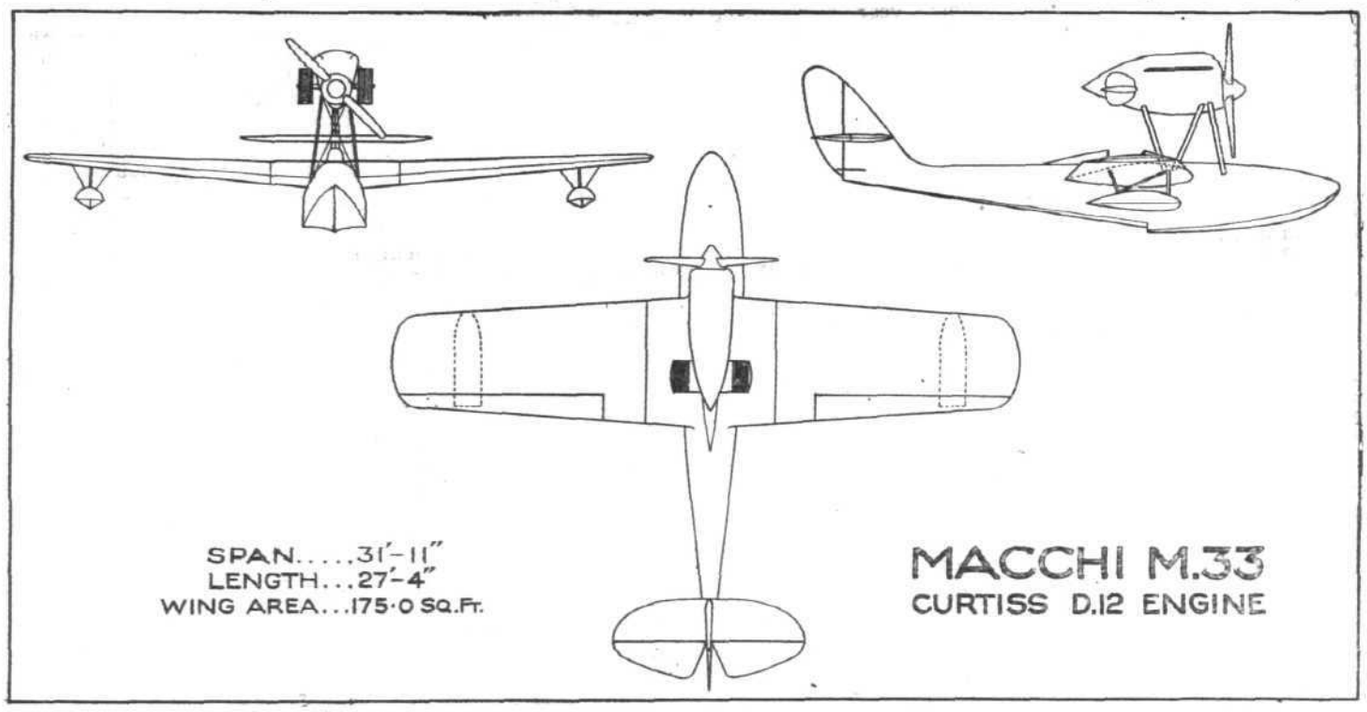
THE SCHNEIDER CUP RACE: This official photograph of the Supermarine-Napier S.4 admirably shows the very "clean" lines, and it is indeed difficult to see where any head resistance could have been saved. As recorded on page 651, this machine, before going to the United States, established a new world's speed record for seaplanes by flying at an average speed of 226·752 m.p.h.

THE SCHNEIDER CUP RACE

British Crew Now in America

By now the British Schneider Cup team, which left London on September 26 in the Atlantic Transport Company's *Minnewaska*, has arrived in Baltimore and has taken up its headquarters at the Southern Hotel there. The machines are being unpacked and the pilots will soon begin practising over the actual Schneider Cup course. This week we are able to publish full-page official photographs of the two British machines, which show admirably the characteristic features of the two types. These photographs are of excellent quality, and with reference to our criticism of certain official photographs issued some time ago, we now learn that the photographic department was scarcely to blame in the matter, as the excellent pictures which we publish this week were in existence at the time, but were thought by those responsible to be *too good* to be issued at the time, as they might have shown too much.

By the courtesy of the Italian Air Attaché, General Guidoni, we are also able this week to give the general arrangement drawings of the Italian challenger, the Macchi M.33 monoplane with Curtiss D.12 engine. This machine is slightly larger than the two British challengers, notably in the matter of wing span, which exceeds our smallest machine by more than 10 ft. At the same time, the design is a very clean one, and the Macchi should give a good account of itself.



THE SCHNEIDER CUP RACE : General arrangement drawings of the Macchi M.33. The engine fitted is a Curtiss D.12.

THE FASTEST TWO-SEATER IN THE WORLD : The Fairey "Fox," fitted with Fairey "Felix" engine, shown in this photograph, is a high-performance two-seater day-bomber. Originally designed by the Fairey Aviation Co. as an entirely independent venture, the machine has now been ordered by the Air Ministry for the Royal Air Force, and is claimed to be the fastest two-seater in the world.

FLIGHT

PROGRESS OF CIVIL AVIATION

Annual Report on the Period April 1, 1924, to March 31, 1925

THE Annual Report of the Directorate of Civil Aviation on the progress of civil aviation, during the period from April 1, 1924, to March 31, 1925, has just been issued as a White Paper (Cmd. 2489), price 2*s*. net. As in previous years, the Report is divided into two main sections, Part I dealing with general subjects and aviation in the British Empire, and Part II with civil aviation in foreign countries.

In the section dealing with relations with foreign countries the Report states that the States which are now parties to the International Air Navigating Convention are: Belgium, Great Britain, Canada, Australia, South Africa, New Zealand, India, Irish Free State, Bulgaria, Czechoslovakia, France, Greece, Italy, Japan, Persia, Poland, Portugal, Roumania, Kingdom of the Serbs, Croats and Slovenes, Siam and Uruguay. Bolivia, one of the original signatories to the Convention, is stated to have denounced the Convention with effect from August 30, 1924. The Report also states that provisional air traffic agreements are in force with Denmark, Holland, Norway, Sweden and Switzerland. The agreement with Germany on a reciprocal basis of three months at a time has been continued, but concerning the temporary agreement with Czechoslovakia, it is stated that further discussions have taken place with the Government, but that owing to the attitude of the German Government it has not been possible to operate any air service to Czechoslovakia.

The interesting announcement is made that, in view of the conclusion of a long-term agreement with Imperial Airways, Ltd., it was considered that the necessity for continuing the Civil Aviation Advisory Board no longer existed, and the C.A.A.B. was accordingly dissolved in July last.

Commercial Air Services

A considerable amount of space is devoted in the Report to an outline of the history of the amalgamation of the four older air transport companies into one new company, Imperial Airways, Ltd., and reference is made to the delays which occurred in opening up the services under the new arrangement. Thus it is stated that the London-Paris route was opened on April 26; the London-Brussels and London-Cologne routes on May 3; the London-Amsterdam-Hanover-Berlin on June 2; and the London-Paris-Basle-Zurich on June 17. The Channel Islands service, it is stated, has only been operating spasmodically during the period under review, and it is expected that it will not be in regular operation before 1926.

Under the terms of agreement Imperial Airways were compelled to fly a minimum of 800,000 miles in the first year, and the Report states that the total mileage covered was 825,525; the monthly totals being:—

1924.—April	1,350	miles.
May	46,590	,,
June	99,680	,,
July	146,820	,,
August	139,280	,,
September	110,345	,,
October	72,175	,,
November	47,280	,,
December	36,420	,,
1925.—January	27,105	,,
February	43,810	,,
March	54,670	,,
Total	825,525	,,

As an instance of the durability of British aircraft material it is pointed out that up to March 31, 1925, one Handley Page machine and two De Havilland 34's had each completed about 2,300 hours of flying, representing, approximately, 200,000 miles each; and three Napier "Lion" engines had each run an average of 1,350 hours.

The Report then refers to the work of the Northern Air Lines, the De Havilland Aeroplane Hire Service, the Savage Sky-Writing Co., and the aerial survey work carried out by the Aircraft Operating Co., the Air Survey Co., the Central Aero-Photo Co., and the Surrey Flying Services, Ltd., all of which have done excellent work during the year.

Details of Sir Sefton Brancker's flight to India and back are given, but as this flight has been fully reported in FLIGHT, it should not be necessary to repeat it here. It is, however, of interest to note that, according to the Report, "In every country visited, views were exchanged with responsible authorities as to the future development of air transport services, and the foundations were laid for further discussions. Keen interest in the possibilities of air transport was met with everywhere."

The Report also states that in India an investigation was carried out in conjunction with the Director of Airship Development, Group Captain P. F. M. Fellows, D.S.O., into the question of sites for airship bases, and that at the end of last year Air Ministry representatives made a thorough examination of possible airship bases at Karachi, Bombay, Madras, Calcutta, Delhi and Colombo, and that as a consequence of discussions with the Indian Air Board, the Standing Finance Committee of the Indian Legislative Assembly have recommended that approval should be given for the leasing rent-free, to the British Government, of a suitable site at Karachi, and for a grant-in-aid approximately equal to the import duties on the materials to be employed in the construction of the base.

Under the section dealing with the training of Reserve Officers it is stated that the number of complete courses carried out during the period under review was as follows:—the De Havilland Aircraft Co., 92; The Bristol Aeroplane Co., 87; William Beardmore & Co., 69; Sir W. G. Armstrong, Whitworth Aircraft, Ltd., 55; and the North Sea Aerial and General Transport, Ltd., 32; giving a total of 335. On March 31, 1925, the number of pilots in Class A and AA of the reserve was, approximately, 510. The seaplane section of the school at Brough was opened during March, 1925, and it is hoped that about 25 officers will receive instruction on a modern type of float seaplane at this school during the year.

During the year in question the following licences and certificates were granted:—Pilots, 40; navigators, 2; ground engineers, 90; aerodromes, 130; heavier-than-air craft certificates of registration, 80; lighter-than-air certificates of registration, 2; heavier-than-air certificates of airworthiness, 128; and lighter than-air certificates of airworthiness, 1.

The Report also gives the interesting information that on March 31, 1925, the following number of licences or certificates were current:—Pilots, 140; navigators, 3; ground engineers, 294; aerodromes, 44; 184 heavier-than-air craft, and 7 lighter-than-air craft were on the Register; and 186 heavier-than-air craft, and 1 lighter-than-air craft had their certificates of airworthiness.

Reference is made to the experimental and test work carried out in connection with night flying and it is stated that it is intended to endeavour to produce a scheme involving the employment of the leader cable principle in connection with Neon tubes which, it is hoped, will enable the aircraft to operate from aerodromes during dense ground fog.

The direction-finding wireless is stated to have been made further use of by pilots and further instances have occurred where by means of courses given by the Croydon station, or positions given by both Croydon and Pulham, flights have been carried out under conditions which would otherwise have proved impossible. The establishment of a third direction-finding station at Lympne will greatly increase the scope of this work.

Technical Services

The section of the Report dealing with Technical Services states that definite minimum requirements as regards take-off and landing of civil aircraft have been formulated and are now operative for land planes, but the corresponding requirements for seaplanes have not yet been determined.

A reference to experiments on sleeve valve engines is interesting, and states that this form of construction is likely to prove very satisfactory as regards reliability. A complete aero engine of 450 h.p. is now almost ready for testing on the bench, and it has been found that on a single cylinder no troubles are experienced up to a diameter of 8½ ins. The compression-ignition system using heavy oil has now been incorporated into complete aero engines, which, it is hoped, will shortly be in the air. The Report states that in so far as the injection system is concerned very little trouble has been experienced, all the difficulties met with so far being of a mechanical nature inside the engine itself, due to the higher maximum pressures developed in this type of engine.

A section dealing with new experimental aircraft is of interest, but as much of the information given is already contained in Sir Sefton Brancker's paper, published elsewhere, there is no need to refer to it here.

Accidents

During the period under review, 12 accidents occurred to which the Air Navigation (Investigation of Accidents) Regulations, 1922, were applicable, and the Report points out that this total is about half that of the previous year. Only one of these accidents resulted in loss of life, but in this case the pilot and seven passengers were killed. None of the other accidents, it is stated, caused more than trifling injuries to pilot or passenger. Of the 12 accidents four occurred on established air routes, one on a Hire Service ; six on short passenger flights and one during a constructor's trials, and it is estimated that four were due to error of judgment on the part of the pilot, two to defects in aircraft structure or controls, two to defects in engine or installation, one due to weather conditions, and three to other causes.

Part 1 of the Report concludes with statistical tables of British Civil Aviation. During the year under review the figures for air transport on regular and irregular routes are : No. of machine flights, 4,677, machine miles, 890,000 ; passengers carried, 13,478, and cargo carried, 508 tons. All these figures, with the exception of the cargo carried, which shows a slight increase, show a disappointing decrease, and it is rather significant that compared with the Air Transport figures those of flying for hire, which would consist mainly of joy-ride flying, account for 23,519 machine flights, 139,000 machine miles, and 43,766 passengers carried. Thus, without any Government subsidy, or assistance of any kind, the joy-riding concerns carried more than three times as many passengers as the subsidised air lines. The flights were, however, of much shorter duration.

A table relating to flights and passengers carried between Great Britain and the Continent shows an increase from 14,777 to 17,835 passengers carried, but the British share of this passenger traffic is disappointing having fallen to 58 per cent., from the high level of 79 per cent. previously reached.

A table giving the statistics of imports and exports by air indicates a large increase in cargo carried by air transport services. The total value of imports and exports was estimated at £1,328,395 ; an increase of £445,162 over the previous year's figure. The principal part of this increase was contributed by exports to, and imports from, France. The table giving statistics of the " efficiency " of the subsidised services is of comparatively little interest on account of the basis employed. Although this basis has been changed this year, to the completion of a stage flight without interruption, it is of little more real value than the " efficiencies " shown on the old basis, and the only basis of any real value would obviously be one giving the number of flights completed as a percentage of the number of flights scheduled. On the basis chosen it is shown that out of 4,328 stage flights commenced, 4,064, or 95 per cent., were completed without interruption, and out of the 264 stage flights interrupted, 105 were completed on the same day after the interruption.

The statistics relating to the causes of the involuntary landings on regular air services show that a total of 286 such landings occurred, this figure not including landings for refuelling. The causes of these landings were : Weather, 50 per cent. ; engine or installation failure, 34 per cent. ; and other causes, 16 per cent.

Concerning the safety of flying, it is interesting to find that from May, 1919, to March 31, 1925, the number of accidents involving the death of passengers was four, and the mileage flown was 3,698,000 miles. The Report points out that this is equivalent to one fatal accident in a distance flown of 924,900 miles, equal to 37 times around the world. For the third year in succession no fatal accident occurred in joy-ride flights. One passenger was, however, slightly injured.

Part II of the Report deals with Civil Aviation in Foreign Countries, but although of very considerable interest, space does not permit of reference to it here.

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Brennan Helicopter Crashes

The Brennan Helicopter, which was built (in great secrecy) for the Air Ministry, was brought out for a trial flight at Farnborough, on October 2. After a preliminary test on the ground, the helicopter, with Mr. R. Graham in the pilot's seat, rose a few feet, and then turned over sideways and crashed into the ground. Some damage was done to the machine, but the pilot escaped unhurt.

Capt. Amundsen Honoured

On September 30, Capt. Amundsen gave a lecture on his Polar flight before an audience of about 3,000 at Edinburgh, when he was given a great reception. He was also presented by Lord Salvesen, president of the Royal Scottish Geographical Society, with the Livingstone gold medal—the highest award of the Society—in recognition of his work on behalf of science.

Air War in Morocco

During last week's big French advance against the Riffs in Morocco, the offensive was assisted to a considerable extent by the use of aircraft. The latter formed a barrage of bombs and machine-gun fire just in front of the advancing French infantry, causing big losses to the Riffs, whose positions were rendered untenable time and again.

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Bristol " Cherub " in Germany : At the recent International meeting at Munich, the Messerschmitt M.17 monoplane, fitted with Bristol " Cherub " engine, obtained first place in both the altitude and the speed competitions, and, according to Herr Messerschmitt, the " Cherub " " ran like clockwork from beginning to end of the competitions." The pilot was Herr Karl Croneiss.

FLIGHT

AIR MINISTRY NOTICES

Notes for the Guidance of Persons wishing to obtain Private Pilots' Licences (Class A).

IT is notified that :—

As it is possible that there may be some misconception regarding the regulations governing the issue and renewal of pivate pilots' licences, *i.e.*, licences for the operation of flying machines not carrying passengers or goods for hire or reward, the following notes are published for the information and guidance of all concerned :—

I. *Issue of Licence*

1. *Requirements.*—A person applying for a private pilot's licence will be required to produce evidence of (*a*) medical fitness, (*b*) competency, (*c*) recent flying experience.

2. *Application.*—The applicant must—

(i) Obtain from the Air Ministry a form of application (C.A. Form 2A) and a medical report form (C.A. Form 61).

(ii) Undergo medical examination by a duly qualified medical practitioner, to whom he should hand C.A. Form 61 and who should forward it on completion to the Air Ministry.

(iii) Complete C.A. Form 2A and forward it to the Air Ministry, together with three unmounted photographs showing an image of the head not larger than $1\frac{1}{4}$ by $\frac{3}{4}$ ins. A fee of 10*s.* must accompany this form, unless the applicant comes under para. 4 (ii), in which case 5*s.* must be sent, together with a fee of £1 1*s.* for the practical flying test (*see* para. 3 (*a*)).

3. *Practical Tests.*—If the medical report under para. 2 (ii) is considered satisfactory, and if the applicant is not exempted under para. 4, he will, in accordance with para. 55A of A.N.D.3, be required to prove his competency by—

(*a*) Carrying out certain practical flying tests, viz. :—i. A test for altitude and gliding flight. ii. Tests of skill.

Arrangements for these tests will be made by the Air Ministry and a fee of £1 1*s.* charged.

Technical Examination.—(*b*) Undergoing a technical examination in :—i. Knowledge of rules as to lights and signals, rules of the air and rules for air traffic on and in the vicinity of aerodromes. ii. Practical knowledge of international air legislation.

This examination will be conducted orally at the Air Ministry. A syllabus can be obtained on application.

4. *Exemptions.*—(i) An applicant who holds a Royal Aero Club certificate issued between February 1, 1920, and October 31, 1922, or who has qualified as a Royal Air Force pilot, is exempted from the practical flying tests under para. 3 (*a*).

(ii) An applicant who holds a Royal Aero Club certificate issued after October 31, 1922, is exempted from both the practical tests and the technical examination (para. 3 above).

5. *Recent Flying Experience.*—The performance of not less than three hours' solo flying within the twelve months preceding the application is the qualification under para. 1 (*c*). The evidence normally required will be the production by the candidate of his pilot's log book containing the record of this minimum amount of solo flying, or a certificate in a similar sense from an approved person or body (*e.g.*, a flying club).

6. *Validity.*—Private pilots' licences are valid, subject to medical re-examination in case of serious ailment, for a period of one year from the date of issue.

II. *Renewal of Licence*

Requirements.—7. A person applying for the renewal of a private pilot's licence will be required to produce evidence of—(*a*) medical fitness, (*b*) recent flying experience.

8. *Application.*—The applicant must—

(i) Obtain from the Air Ministry a medical report form (C.A. Form 61).

(ii) Undergo medical examination as in para. 2 (ii).

(iii) Forward his licence and a fee of 5*s.* to the Air Ministry.

(iv) Furnish evidence as required in para. 5 above of having flown solo for not less than three hours within the twelve months preceding the application.

9. *Practical Tests.*—Failing the production of the evidence required under para. 2 (iv) and provided the medical report is satisfactory, the applicant will be required to carry out the practical tests laid down in para. 60 (*b*) of A.N.D. 3 as amended by A.N.D. 3C, viz. :—(*a*) Three figure of eight turns. (*b*) Three landings finally stopping the aircraft on each occasion within a distance of 50 yards from a previously arranged point.

Arrangements for tests will be made by the Air Ministry.

III. *Flight of private British flying machines within Great Britain and Northern Ireland.*

10. *General Conditions of Flying.*—A flying machine may not fly (except for the purpose of experiment or test and in accordance with certain other conditions) unless—

(*a*) It has been registered and bears its nationality and registration marks and the name and address of the owner.

(*b*) It has been certified as airworthy and complies with the conditions specified in its airworthiness certificate.

(*c*) Its operating personnel possess the prescribed certificates of competency and licences.

(*d*) It carries the prescribed documents and journey log book, kept up to date in the prescribed form and manner.

11. *Registration.*—(i) Application for registration must be made to the Air Ministry on C.A. Form 1 accompanied by a fee of £1 1*s.* A diagram showing how the nationality and registration markings should be painted on the flying machine is sent out by the Air Ministry with the Certificate of Registration. These markings, with name and residence of owner, must also be inscribed on a metal plate affixed to the fuselage.

(ii) In the event of change of ownership the Air Ministry must be notified and the registration lapses.

(iii) In the event of the flying machine being destroyed or permanently withdrawn from use the Air Ministry must be notified and the registration lapses.

12. *Certificate of Airworthiness.*—(i) Application for a Certificate of Airworthiness must be made to the Air Ministry on C.A. Form 3 accompanied by a fee of £5 5*s.* in the case of a "subsequent aircraft," *i.e.*, a flying machine which conforms in all essential respects affecting its safety with a "type aircraft" in respect of which a Certificate of Airworthiness has been issued. Fees for "type aircraft" are higher and are based on the "tare" weight; details are set out in Schedule VI of the Air Navigation (Consolidation) Order, 1923.

(ii) Certificates of Airworthiness are normally valid for one year from date of issue and are renewable annually after inspection of the flying machine by the Aeronautical Inspection Directorate. For each renewal a fee of £5 5*s.* is charged.

(iii) All flying machines must carry instruments and equipment as specified in Section V of A.N.D. 3 (under amendment).

(iv) Overhauls and repairs of private flying machines must be certified by licensed ground engineers, but daily certificates of safety are not required. Certificated flying machines may be inspected by authorised representatives of the Secretary of State and the latter may cancel or suspend the certificate of airworthiness of any flying machine deemed to be unsafe.

13. *Prescribed Documents.*—The following documents must be carried in all private flying machines registered in Great Britain and Northern Ireland :—

(i) Certificate of Registration.

(ii) Certificate of Airworthiness (to be kept in pocket of journey log book). (iii) Pilot's Licence. (iv) Journey Log Book.

(These log books are obtainable from the Air Ministry, price 4*s.* each; they are issued only in respect of individual flying machines, and the first page of each book is completed by the Air Ministry before issue.)

14. *Aerodromes.*—Private flying machines may operate from unlicensed aerodromes, though they have no right of landing in any place as against the owner of the land or other persons interested therein.

15. *General.*—(i) Before flying private flying machines, pilots should study the provisions of the Air Navigation Orders and Directions (a list of which is contained in Section IV) regulating flight in this country and in particular those relating to general safety, rules of the air, dropping of articles and prohibited areas.

(ii) Attention is also called to the Investigation of Accidents Regulations and to the requirements with regard to the notification of accidents.

16. *Air Navigation Regulations.*—The full regulations governing the flying of British aircraft registered in Great Britain and Northern Ireland are to be found in the following publications, all of which are obtainable from H.M. Stationery Office, Kingsway, London, W.C.2, or through any bookseller, at the prices shown :—

(i)	Air Navigation Act, 1920	2*d.*
(ii)	The Air Navigation (Consolidation) Order, 1923	1*s.*
(iii)	The Air Navigation Directions, 1922 (A.N.D.3)	3*d.*
(iv)	,, ,, ,, 1922 (A.N.D.4)	1*d.*
(v)	,, ,, ,, 1923 (A.N.D.3A)	1*d.*
(vi)	,, ,, ,, 1923 (A.N.D.4A)	1*d.*
(vii)	,, ,, ,, 1923 (A.N.D.5)	1*d.*
(viii)	,, ,, ,, 1924 (A.N.D.3B)	1*d.*
(ix)	,, ,, ,, 1924 (A.N.D.3C)	1*d.*
(x)	,, ,, ,, 1924 (A.N.D.3D)	2*d.*
(xi)	The Air Navigation (Investigation of Accidents) Regulations, 1922	2*d.*

(No. 56 of 1925.)

THE LESSONS OF SIX YEARS' EXPERIENCE IN AIR TRANSPORT

By MAJOR-GENERAL SIR SEFTON BRANCKER, K.C.B., A.F.C., F.R.Ae.S.

"THERE are too many men still who cannot take air transport seriously: they look upon it as a sort of blind alley in aeronautical progress—too dangerous, too unreliable, and too costly ever to be of serious commercial value, and fit only for a camouflage under which can be hidden a military reserve for the Royal Air Force."

This remark occurs in the first paper of the present session of the Royal Aeronautical Society, which was to have been read by its Chairman, Major-General Sir Sefton Brancker, Director of Civil Aviation, on October 1, and before actually leaving for the East, Sir Sefton wrote a very long paper under the above title. As he has not yet returned from his trip to the East, the paper was read in his absence by Major Mayo. The paper was one of the longest ever read before the Royal Aeronautical Society, and it is obviously impossible for us to do more than give a résumé of some of the more important points, and for the complete paper we would refer readers to the forthcoming issue of the Society's *Journal*.

In his paper Sir Sefton Brancker expressed the most definite disagreement with the views stated in the opening sentence, although he admitted that the history of British air transport so far had been disappointing in its slowness of development, and discouraging in its constant demands for financial assistance. He was convinced, however, that it must become one of the principal means of long-distance transport and communication throughout the world.

During the six years that air transport had been in operation they had learned a great deal. The personnel was not likely to be much improved in the future, as the pilots and mechanics in British civil aviation were beyond reproach, and had pushed up efficiency to the highest pitch possible with the facilities provided. On examining the aircraft themselves and their engines, there was, however, great room for improvement everywhere and a vast field for scientific activity, and he personally believed they had arrived at a stage at which the future development depended to a very great extent on the ability of designers and scientists, and on the measure of financial support which could be given them.

Safety

The paper then summed up the various sources of danger, and quoted statistics which showed that most accidents had been caused by error of judgment on the part of the pilot, and as regards actual figures, the paper showed that out of a total of five fatal accidents in British air transport since its inception, two were due to error of judgment; one was a power plant failure leading to error of judgment; one was bad weather, leading to error of judgment; and one was a collision. Summing up, all accidents which could be classed as dangerous, including those which involved fatalities, totalled 12, and their basic causes were as follows: error of judgment, 8; power plant failure, 2; collision, 1; faulty compass, 1.

In dealing with the list of sources of danger in air transport, Sir Sefton stated in his paper that breakage in the air should never occur, but all men were human, and inaccessible parts might miss inspection, and he would therefore urge that simplicity of design was a great guarantee of safety. Every vital part should be easily seen and easy of access. Much the same applied to the second source of failure: that of jamming of controls. Concerning the third, danger of fire in the air, this was now negligible, as the remote possibility of a petrol pipe breaking was guarded against by the provision of fire-proof bulkheads between the engine and cabin. In this connection there was one question which he thought designers should consider. Up to the present all air-intake pipes had their openings on the outside of the cowling. This was a source of unreliability in cold climates, as snow was liable to get into the intake pipes and smother the engines. He would like to know how far designers could undertake that the engine nacelle could be so well ventilated that it would be safe to place the intake pipes inside the cowling.

The fourth source of danger, that of failure of power plant, was ever present in the mind of the pilot. The paper stated that the power plant very seldom failed so suddenly and completely as to necessitate an immediate landing, and there was nearly always sufficient power left to reach a place of safety. Herein lay one of the advantages of the two-engined machine. Although it might not be able to fly on one engine, it could always carry out a very long glide. It could thus be definitely stated that, other things being equal, the two-engined aircraft was safer than the single-engined. It was obvious that if they could design a three-engined machine which flew satisfactorily, the chances of forced descent through failure of power plant would practically vanish. This statement must not be taken to mean that Sir Sefton Brancker admitted the impossibility of producing an absolutely reliable single-engined installation, but much had yet to be learned about the three-engined aircraft.

Error of judgment had been the basic cause of 8 out of 12 dangerous accidents. These could be divided into categories, five of which were the fault of the pilot in that he took the wrong action, and three of which were caused by failure to handle the aircraft correctly. The first category did not affect the designer and, by way of an example, there was the case of the collision caused by a breach of the regulations. The second category did affect the designer. From the beginning the designer had always been prone to assume that his aircraft would be flown by an absolutely first-class pilot. "In air transport" the paper continued, "we want a really foolproof machine, which implies, first and foremost, a low stalling speed and a good initial climb when taking off." In normal aircraft both these qualities militated against the high top speed and a heavy load, but the economic cruising speed of 100 m.p.h. demanded should not place any great difficulties in the way of obtaining a very low stalling speed. Already the problem was being solved by the introduction of slots and flaps, and further development of these devices was of vital importance to air transport.

The sixth source of danger, adverse weather, had seldom been the direct cause of an accident, but it sometimes led to bad judgment by the pilot. A reliable power plant, combined with efficient wireless communication, would eliminate the danger of darkness and fog. The danger of lightning had often been discussed, but, actually, they knew very little about it. Lately they had had two aircraft, one of which was not a commercial machine, struck by lightning while in the air. Both were modern craft flying over the sea, and both were carrying wireless sets with aerials down. In one case the aerial and wireless set were fused and the whole aircraft was highly magnetised, and it was impossible to use the compass until it had been demagnetised. In the second case the engine stopped, apparently through the magneto being put out of action. Lastly, there was the danger of collision in the air, but on properly organised routes this risk should now be very remote, although when night-flying and cloud-flying became regular practice they must realise that the danger of collision would increase. It was, therefore, necessary that scientists should begin to consider this question and evolve some sort of automatic warning of the approach of another machine. In summing up the dangers encountered in flying, the paper stated:

"This concludes my review of the dangers inherent in flying. They cannot be said to amount to very much. Summing them all up, the following are the principal points on which designers and scientists can best help the operators to avoid danger:—(1) The development of metal construction for every component of the aeroplane, and further investigation into the action of fatigue on these metal structures. (2) The provision of an infallible power plant, even at the cost of extra weight and extra expense. (3) The design of aircraft of greater stability and easier to handle than those in use today. (4) The perfection of wireless navigational equipment. (5) The elimination of the possibility that snow may choke the engine. (6) Investigation of the effect of lightning and the development of measures to prevent any danger therefrom. (7) The evolution of some form of automatic fog signal which will function between aircraft in full flight."

Reliability

Turning now to the question of reliability, the paper pointed out that the two main sources of unreliability were weather and defects in power plant. These two causes covered three-fourths of the total, the balance being chiefly due to landings to take in fuel. Of this three-fourths, weather was responsible for 66 per cent., and mechanical defects for 34 per cent. over the whole year, but during the winter months weather accounted for 78½ per cent., while in summer it dropped to 50 per cent.

By weather was chiefly meant bad visibility, as this was practically the sole meteorological cause of delays. All their aircraft could fly in bad visibility; it was the pilots who refused to fly, and with existing aircraft, if the pilots did not refuse, he (Sir Sefton Brancker) "would probably have some more items to add to the accidents caused by 'error of judgment.'"

The pilots deserved all sympathy in their struggles with bad visibility conditions. The achievements of some of them in this respect had been wonderful, and they had frequently accomplished feats of air navigation voluntarily, for which orders from a higher authority would not have been justified. It was, therefore, of vital importance that the best brains should be concentrated on the problem of producing aircraft which would not call for such a high standard in piloting, and with which operations in bad visibility could be demanded without injustice to the navigating crew. First and foremost, one must have aircraft of great stability, although whether this stability should be inherent in the design or obtained from some automatic mechanism the lecturer was not prepared to say. The most promising means of obtaining stability appeared at the moment to be the gyroscope. Already a gyroscopic rudder control had been in operation for some weeks with Imperial Airways, and it won high praise from the pilots.

The pilot's lack of confidence in his means of navigation was not, perhaps, so fully justified as his dissatisfaction on other matters. The latest compasses were really very good, if properly placed. Directional wireless, although a little clumsy, worked extremely well. With existing wireless equipment it had already proved possible to bring an aircraft practically over an aerodrome in bad visibility. It then became necessary to evolve means of bringing it down safely. They had tried new systems of landing in fog with some success, and it had been found that the Neon light gave the best results. They had tried in miniature the "leader cable" with satisfactory results, and at Croydon during the coming winter he hoped they would be able to try out on full scale a complete system of landing in fog.

Turning to the second main cause of unreliability, that of mechanical defects in the power plant, it had already been mentioned that this represented the cause of from 21½ to 50 per cent. of unreliable flying, according to the time of the year.

A careful study of the causes of engines being removed before their proper date of overhaul indicated that the real definite sources of trouble were 28 per cent. in the water system, 19 per cent. valve breakage or distortion, and 10 per cent. oil circulation, the three items together accounting for 57 per cent. of the whole. As regards the lesson to be learned from these figures, the first was that lately water-cooling had been their greatest weakness, and the simplest way of curing this trouble would appear to be the employment of air-cooled engines, of which already types of great reliability were in existence, and would shortly be put into regular commercial service. With regard to the 19 per cent. valve trouble, they were developing a sleeve valve engine which should certainly eliminate this source of trouble; but even without this the lecturer felt that something could be done to improve the wear and tear qualities of the valves of ordinary practice, while oil trouble could surely be avoided by more care in detail design. The lecturer therefore arrived at the conclusion that the most prevalent causes of diseases of the standard engines—water, valves and oil—appeared to be comparatively easy to remedy in the future.

Concerning the 23 per cent. of removals, caused by breakage of some part or other, the lecturer said these were mostly minor items, although there were three cases of breakage in the reduction gear which were, of course, very serious items, and pointed to the advisability of using direct-drive engines. Certain new types to be put into service had direct drive, but, generally speaking, aircraft designers were almost unanimous in demanding a geared-down engine.

Multi-engined Machines

The question of multiple engines was then considered as a means of avoiding forced landings, and so eliminating, perhaps, the whole of the unreliability due to mechanical failure. No two-engined machine that the lecturer knew of could be counted on to reach its destination carrying an appreciable load with one engine out of action. In other words, it did not surpass the single-engined machine in reliability, although, as already indicated, it certainly appeared to give a greater measure of safety. The two-engined machine, with its engines in tandem, offered the best endeavour towards reliability, but of this type they did not have much experience in this country.

The three-engined aircraft seemed to deserve consideration next, after the two-engined type. They had as yet had little experience, but on paper the three-engined machine should always be able to reach the end of its stage with one engine stopped. Several such aircraft were under construction, and by this time next year they ought to know whether this was the right solution or not. The most serious item of doubt was the effect of the slipstream from the front propeller on the propellers of the two wing engines. If insuperable difficulties were found there they might have to go to the four-engined machine, with engines in tandem, which system had already been proved to be aerodynamically sound. Personally, the lecturer still believed that it was possible to design and construct an absolutely reliable single-engined aircraft. Summing up the most important subjects for the study of the technical experts in order to better matters, the paper stated :—

"1. Once more, the development of metal construction for every component of the aircraft, and the further investigation into the action of fatigue on all metal structures, particularly those included in the aero engine.

"2. Once more, the provision of an infallible power plant, even at the cost of extra weight and expense. The direct-drive engine is obviously more reliable than the geared engine, and it is for the scientist to endeavour to obtain as good a lift from an ungeared engine as from a geared-down engine.

"3. Once more the design of aircraft of greater stability and ease of handling than those in use today, particularly with a view to flying long distances through cloud without fear of loss of control.

"4. Again, the perfection of wireless navigation equipment.

"5. Again, the elimination of the possibility that snow may choke the engine.

"6. The evolution of some system of guiding an aircraft safely into an aerodrome during fog.

"7. Very close attention to the reliability of all components of the installation.

"8. The development of a satisfactory heavy-oil engine, without exceeding the total weight per horse-power of 'engine plus four hours' fuel' of existing petrol engines.

"It will be seen that several of the most important scientific investigations and items of technical progress necessary to attain perfect reliability are also demanded in the interests of safety, and at no point do these two interests clash in any way: a very satisfactory deduction from every point of view."

Economy

Turning to the real bugbear of air transport—the cost of operation—the paper stated that the history of British air transport in economic progress was a sad one. They had passed through a series of changes in Government policy which had retarded all efforts at steady progress in effecting economies. Finally, they had placed the activities of British air transport within Europe in the hands of a purely commercial organisation, with a clearly defined measure of Government financial assistance promised for a period of 10 years, of which 1½ years had already elapsed. This company had an unfortunate start, and it was now reaping the full harvest of the troubles which were sown through the initial errors of its policy. However, it was hoped that the worst moments were over and that they soon would be given a demonstration of maximum possible efficiency with a minimum of expenditure.

One serious economic difficulty of air transport was that nothing but the best was good enough, and the lecturer thought that air transport must always be expensive when compared with other forms, and he recalled Sir Charles Parsons' statement that air transpert was "always hauling up an inclined plane." The most important items of expenditure on the operation of a service were as follows: (*a*) Cost of fuel and oil; (*b*) the pilots' and mechanics' flying pay; (*c*) engine maintenance and overhauls (man-hours and spares); (*d*) aeroplane maintenance and overhauls (man-hours and spares).

Concerning (*a*), fuel and oil at present accounted for about 30 per cent. of the operating costs. The possibility of an appreciable reduction in the cost of petrol in the near future seemed remote, and they must look to the scientist to obtain the necessary horse-power with a smaller expenditure of fuel: or evolve a means of employing a cheaper form of fuel. Very great progress had been made towards the production of an engine burning heavy oil, and the weight of fuel consumed per horse-power promised to approach something like 20 per cent. less than that of the petrol burnt in existing engines. Taking the cost of heavy oil as about one-fifth of that of petrol, an aircraft of similar horse-power and qualities as the Handley Page W.8 would therefore effect a saving of about 8*d*. per ton-mile by fitting heavy-oil engines. The airship scheme

covered considerable expenditure towards the development of the heavy-oil engines, and the result of these researches would be of great value to the operators of heavier-than-air craft. (*b*) The cost of pilots' and mechanics' flying pay was a comparatively small item, but was worthy of consideration. At present it was equivalent to 1¼*d*. to 1½*d*. a mile, according to speed of aircraft.

The biggest item of operational cost was, however, (*c*) the maintenance and overhaul of engines, which represented about 44 per cent. of the total. Referring again to that part of the paper dealing with reliability, the lecturer recalled that the four most serious troubles arose from the water system, the valves, the oil circulation, and the breakage of parts usually of small importance. Two of these categories—water system and oil circulation—totalled 38 per cent. of the whole : the cost of spares was scarcely involved. The other two—valves and breakage of parts—totalled 42 per cent., and involved considerable expenditure in spare parts as well as man-hours. All these cases involved many man-hours wasted in removing faulty engines and installing sound ones. From this he thought it would be safe to say that an increase in the capital cost of the engines and spares would be justified if thereby the frequent removal of engines could be avoided and hours before overhaul lengthened.

The next item of operating cost was (*d*) the maintenance and overhaul of aircraft, which accounted for about 20 per cent. of the total. The first cry of the operator was for simplicity and ease of access to all important components. It was to be feared that war methods had led designers into bad habits, which had continued since the war, and it was only the economic pressure of commercial operation which had brought vividly to notice the fact that much money spent in maintenance could be saved if more attention had been paid to simplicity in design. Many of the defects in this respect could be eliminated in the future by a little careful thought and common sense. The thick-wing, cantilever monoplane had certainly proved easiest to maintain in efficient flying condition. It was claimed for the Fokker types that the planes need not be touched for a period of twelve months, and he thought that the Junkers lasted even longer without attention.

Unfortunately, the lack of continuity in policy had made it difficult to obtain reliable data regarding the operation of the aircraft in use. Some of our machines had flown for as much as 2,000 hours, covering perhaps 170,000 miles, without undergoing a thorough overhaul, but inspection had revealed that it was not wise to permit such long periods of operation with wooden aircraft.

The lecturer then gave an outline of the system in force on British air lines, according to which the machine undergoes a "dock overhaul" after every 250 hours' flying, and after three years' service the aircraft should be completely overhauled and practically reconstructed. Most of the defects discovered lately during periodic inspection had been directly due to the perishable nature of wood and fabric, and he was therefore forced to the conclusion that the adoption of all-metal aircraft seemed to be the next step towards reducing cost of maintenance. The effect of improvements in design, leading to longer hours between overhauls, was of a twofold nature : not only would the actual spares and man-hours be lessened, but the amount of work which aircraft could accomplish in a given time would be increased.

Insurance was a big factor in costs, and, since the beginning of civil aviation in 1919, insurance rates had varied between 12 per cent. and 30 per cent. per annum, on the capital cost of the aircraft, regardless of the number of hours it spent in the air during the year. Negotiations were, however, in progress with a view to putting insurance upon a mileage basis.

The various possibilities of reducing operation costs were summarised as follows :—"1. Reduction in the weight of fuel consumed per horse-power, particularly in air-cooled engines. 2. The introduction of some cheaper fuel than petrol. 3. Once again, an improved power plant, even at cost of extra weight and expense. 4. Once again, the introduction of all-metal aircraft, even at greater capital cost. 5. The development of the thick-winged cantilever monoplane or biplane without external struts and bracing. 6. Investigation and prevention of corrosion in metal.

"It will be seen that two of these steps towards greater economy in operation are similar to those already demanded for safety and reliability, and that none of the others need necessarily clash with the requirements of these two latter essentials."

Hitherto the paper had considered the possibility of reduction of operational costs for a fixed load. In the next section the question was examined of the possibility of carrying a greater paying load per horse-power for a fixed operational cost. 74 per cent. of the total cost could be attributed to the maintenance and the fuel consumption of the engine. Further, the capital value of engines, and of most normal commercial aircraft, was closely related to the horse-power employed, and for this reason the contract with Imperial Airways had been modified from a purely mileage basis to a horse-power mileage basis. If they accept the plea that operational costs were directly proportionate to the horse-power enployed, the two problems which presented themselves to the designer in his struggle towards producing a really economic aircraft were : how could he carry a greater total weight per horse-power, and how could he improve the ratio of the weight of paying load to the total weight of the aircraft ? These two problems were closely bound up together, and yet offered different aspects.

To commence from actual facts, the existing standard commercial machines gave the following results :—

Type.	h.p.	Total weight per sq. ft. (lbs.)	Total weight per h.p. (lbs.)	Paying load per h.p. (lbs.)
De Havilland 34	440	13·5	16·4	3·1
Handley-Page W.8.	710	8·6	17·6	3·85
Supermarine "Sea Eagle" ..	365	9·95	16·6	2·19

It was on these figures that they must endeavour to make a definite improvement, and the following solutions presented themselves : (*a*) increased wing area ; (*b*) a good climbing wing section ; (*c*) the employment of flaps, slots and similar devices ; (*d*) variable pitch propellers ; and (*e*) the "ground boosting" of engines.

Under (*a*), Sir Sefton Brancker stated that when new designs were being considered in the drawing office, speed was apt to lose its importance in the eyes of the designer, who was prone to sacrifice speed in order to attain the apparently more commercial attributes demanded, but speed had a very high commercial value. Sir Sefton admitted that possibly considerable experience of racing with darkness, and of long journeys carried out against high winds, had biassed him a little in favour of speed, but he thought that in normal conditions the cruising speed of 100 m.p.h. was necessary. In fact, for mails he thought that considerably higher speeds would be demanded in the future. Overseas it was found necessary to fly long stretches against strong winds, and, for this reason, military opinion had put the proper speed for the Egypt-Iraq service at 120 m.p.h. It was possible, however, that goods services would fly at much lower speeds, and so, while maintaining his demand for at least 100 m.p.h. for normal traffic, he would suggest that designers should seriously consider the problem of how slow it was possible to fly economically with goods traffic in view.

As regards (*b*), Sir Sefton said that here he was very much out of his depth. but he thought that a thick-wing type of aircraft appeared to offer great possibilities.

Under (*c*), the paper made reference to the various devices for increasing lift, such as the de Havilland flaps and the Handley Page slots, and it was stated that about five new types of aircraft were to be fitted with slot gear so that definite experience should soon be available.

Under (*d*) and (*e*), reference was made to variable pitch propellers and "ground boosted" engines and, to get the best results, the two should, of course, be combined. With all these developments the paper stated that a total increase in total weight carried per horse-power of 25 to 30 per cent. should not be impossible, and it should be possible to design, even at the present time, an aircraft cruising at 100 m.p.h. and weighing, fully loaded, 25 lbs./h.p., which would be safe and easy to fly.

A brief reference was then made to the flying boat or seaplane, and the table showed that the small flying boat had a very small ratio of paying load but, on the other hand, the paper stated that the leading designers held the view that really big boats or seaplanes would work out to be lighter than aeroplanes of the same size, and would, consequently, give a better ratio of paying load.

By way of showing what improvement one might hope to attain by incorporating all such features as were known at present, and which might be expected to give a greater ratio of paying load, Sir Sefton Brancker's paper took as a basis a standard aircraft closely approximating to one of those at present in operation. This aircraft carried a total load of 18 lbs./h.p., of which only 3·5 lbs./h.p. represented paying load. Its cruising speed was 85 m.p.h. and its endurance about 4½ hours. Its cost of operation, including only fuel,

maintenance and overhaul, flying pay and wireless, was 3*s.* a ton-mile. To this must be added overhead charges, such as insurance and depreciation, which were assessed at 2*s.* a ton-mile. This was an imaginary figure, but was, the lecturer thought, sufficiently high, and the total cost was, therefore, 5*s.* a ton-mile. Earlier in the paper it was indicated that the operating costs were divided approximately as follows: Fuel and oil, 30 per cent.; maintenance and overhaul of engines, 44 per cent.; maintenance and overhaul of aircraft, 20 per cent.; miscellaneous, 6 per cent. If some of the improvements outlined materialised, it should be possible to reduce the fuel bill to one-fifth, engine maintenance to half, and aircraft maintenance to three-quarters of their present figure. This would result in a saving in operational costs of more than 50 per cent., bringing the cost of operating standard aircraft down to 1*s.* 6*d.* a ton-mile, without overhead charges. If it was supposed that a total loading of 24 lbs./h.p. could be attained, this would mean an increase of one-third in the carrying power, thus further reducing the cost of operation to 1*s.* 1½*d.* per ton-mile. In the standard aircraft the ratio of paying load to total load was approximately one-fifth. If this ratio could be increased to one-fourth, the cost per ton-mile would then fall to 10½*d.* Finally, a rate of 1*s.* 10½*d.* a ton-mile at 85 m.p.h. could not be considered out of reach. The higher cruising speed of 100 m.p.h. would increase expenses somewhat, but, even allowing as much as 4½*d.* a ton-mile for metal construction and for the higher cruising speed, the figure would only be 2*s.* 3*d.* per ton-mile, at 100 m.p.h.

As relatively little has been permitted to become known concerning the experimental commercial machines at present being developed, the section of Sir Sefton Brancker's paper dealing with these is given in full below:

"Three specifications were drawn up in 1922 for the following types:—(i) An improved 'Cross-Channel' machine cruising at 100 m.p.h., and carrying 5 lb. of paying load per horse-power. This specification was an endeavour to produce a machine which could carry its load at a cheaper rate per ton-mile than is possible at present. (ii) A 'Middle East' machine, fitted with three air-cooled engines and capable of flying 500 miles against a 30-mile-an-hour wind. Paying-load as great as possible. The specification was dictated by the conditions prevailing in Iraq and the Persian Gulf. (iii) An 'Imperial Communication' machine, fitted with three engines and capable of reaching Malta without refuelling. It was hoped that such an aircraft could reach Australia by an 'All-Red' air route. Orders have since been placed for (i) and (ii). Specification (iii) proved too difficult to accomplish; a machine with this range could have been produced, but its paying load would have been too small for practical purposes. The type was therefore abandoned for the present. For specification (i), the de Havilland 54 is the first representative. I do not think that she will carry as much as 5 lb. paying-load per horse-power, but she will come near it, and marks a very distinct advance on any existing type. She is fitted with automatic flaps, and a single Condor engine.

"There is another of this type ordered with three air-cooled engines, but her development has been so much delayed that she may have to be cancelled altogether. Owing to being fitted with three engines, it is unlikely that her paying-load per horse-power will be as high as that of the D.H.54.

"The representative of the type (ii) is the Siddeley-Armstrong 'Argosy,' fitted with three Jaguar engines. She will be our first real three-engined machine designed for a specific purpose from the start. She is partly of metal construction. During 1924, Imperial Airways came to the conclusion that this type, although designed for the Middle East, would also meet European conditions excellently, and so ordered two more machines.

"At a later date, three more specifications were put out by the Air Ministry:—(iv) A flying boat with two air-cooled engines, totalling about 500 h.p. This specification was based on the demand for a small flying boat for pioneer work and short-distance services in various parts of the world; cheapness in original cost and maintenance being of great importance.

"Five hundred horse-power is considered to be about the lowest possible for a really airworthy boat with an appreciable paying-load, and the two-engine system has certain obvious advantages in the design of flying boats.

"(v) A large passenger-carrying flying boat with three engines capable of flying 500 miles against a 30-mile wind. This is intended to meet the conditions existing on the Calcutta-Rangoon service or some similar route over water.

"(vi) A freight-carrying aircraft to carry about 9 lb. of paying-load per horse-power for 4½ hours. The anticipated cruising speed of this machine is from 60 to 65 miles an hour. This specification was dictated by a desire to discover what is the greatest total load per horse-power that can be carried on a regular freight service. Aircraft to meet these three specifications have all been ordered, or are just about to be ordered. In addition to these, two all-metal twin-engine flying boats and a very large all-metal three-engine aeroplane are on order. These are not being produced for a particular service, but in order to test thoroughly a very promising system of metal construction. Further specifications are being drawn up for a mail-carrying machine of high speed, a survey machine and a 'cheap maintenance' machine, which latter, I hope, may be all-metal.

"In addition to the aircraft enumerated above, the Fairey 'Freemantle,' the Supermarine 'Swan,' and the Vickers' 'Vanguard' are about to undergo operational tests with Imperial Airways.

"The Fairey 'Freemantle' was originally ordered for the specific purpose of flying round the world, and she might still be the first aircraft to circumnavigate the globe on the spares she could carry with her. She is an example of the long-range float-seaplane suitable for light traffic.

"The Supermarine 'Swan' is a normal two-engine flying boat designed to carry passengers and freight; she can be fitted with amphibian gear. She should give us valuable data regarding the best methods of arranging accommodation for various classes of traffic on flying boats.

"The Vickers' 'Vanguard' is a normal two-engine machine, designed to accommodate a large number of passengers; it is intended to carry out studies in lighting, heating, ventilation, silencing, and the comfort of passengers generally, on this aircraft.

"This list, of course, does not cover the many experiments which are being made in slots, heavy oil, sleeve-valves, metal construction, &c."

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NEW R.A.F. DEFENCE APPOINTMENTS

THE Air Ministry announces the following appointments:—

1. Air Vice-Marshal H. R. M. Brooke-Popham, C.B., C.M.G., D.S.O., A.F.C., to be Air Officer Commanding, Fighting Area, Air Defence of Great Britain, to date April 1, 1926.

2. Air Vice-Marshal J. M. Steel, C.B., C.M.G., C.B.E., to be Air Officer Commanding, Wessex Area, Air Defence of Great Britain, to date May 1, 1926.

It should be noted that these are the first appointments to two of the principal posts to be created under the Air Officer Commanding-in-Chief, Air Defence of Great Britain, Air Marshal Sir John Salmond. The Air Officer Commanding, Fighting Area, will command all the fighting units engaged in Home Defence. The Air Officer Commanding, Wessex Area, will command all the Home Defence bombing units.

Air Vice-Marshal Brooke-Popham was appointed to the Royal Flying Corps from the Oxford and Bucks Light Infantry in 1912 and served in France from August, 1914, with short intervals until the end of the war. He was appointed in command of a wing in February, 1915, and was subsequently employed on staff duties at Royal Flying Corps Headquarters. After the war he became Director of Research at the Air Ministry until November, 1921, when he was appointed the first commandant of the then newly constituted Royal Air Force Staff College. He will relinquish this appointment to Air Commodore Ludlow Hewitt to take up the post of Air Officer Commanding, Fighting Area.

Air Vice-Marshal Steel was employed on naval duties during the early years of the late war, being promoted Captain, Royal Navy, in December, 1916. From February, 1917, until the end of the war he commanded the Royal Naval Air Service station at Eastchurch. After the war he became Director of Operations and Intelligence at the Air Ministry, being appointed in addition to be Deputy Chief of Air Staff in August, 1922. Since November, 1923, he has been an additional member of the Air Council. He will be relieved as Deputy Chief of Air Staff and Director of Operations and Intelligence by Air Commodore Newall.

THE ROYAL AIR FORCE

London Gazette, September 29, 1925.

In pursuance of his Majesty's pleasure, Air Vice-Marshal D. Munroe, C.B., C.I.E., M.B., Director of Medical Services. R.A.F., has been appointed an Honorary Surgeon to the King (September 21).

In pursuance of his Majesty's pleasure, Gp. Capt. H. V. Wells, C.B.E., has been appointed an Hon. Physician to the King (September 21).

General Duties Branch.

The following are granted permanent commissions as Pilot Officers with effect from the dates indicated, and with seniority of the dates indicated in brackets :—J. C. C. Slater, September 12 (September 12, 1924) ; C. F. C. Coaker, September 26 (September 26, 1924) ; R. F. Findlay, September 26 (September 26, 1924).

The following are granted short service commissions as Pilot Officers on probation, with effect from, and with seniority of, the dates indicated :—D. L. Kavanagh, J. H. Leach, S. A. Thorn, D. G. K. Walker (September 21) ; W. A. Andrews, W. E. Barnes, J. Blackmore, W. G. Campbell, G. C. Crackanthorpe, H. C. G. Dauncey, J. M. Hunter, J. F. Lawn, H. G. Loch, W. C. McNeil, L. H. Mason, T. F. Moloney, C. M. Peabody, R. T. Read, G. L. G. Richmond, J. T. Riggs, L. G. Rumsey, E. T. M. Smalley (September 26).

The following Pilot Officers are promoted to rank of Flying Officer :—E. A. C. Bushell (July 10) ; J. E. Preston, F. E. North, G. M. Pitts-Tucker, H. Thomas, F. T. Stacey (August 3) ; H. G. Slater (September 3).

Flight Lt. E. R. Whitehouse is restored to full pay from half pay (September 21). The following are transferred to the reserve :—Class A.—Flying Officer H. Macmillan, (September 27) ; Flying Officer A. C. Heaven, M.C. (September 30). Class C.—Flight Lt. D. C. Balfour (October 1) ; Flying Officer H. W. Parker (October 1) ; Flying Officer C. J. Watson (October 1).

Pilot Officer J. C. Don resigns his permanent commission (September 30) ; Flying Officer A. R. Buchanan resigns his short service commn. (September 30) ; Pilot Officer on probation S. A. B. Harries relinquishes his short service commission on account of ill-health (September 30). The following relinquish their temp. commissions on return to Army duty :—Squadron Leader G. G. Adeley (Capt., R. Ulster Rifles) (September 16) ; Flying Officer J. Dunn (Lt., R.A.) (September 23). Flight Lt. C. J. Truran, A.F.C., is cashiered by sentence of General Court Martial (August 8).

Stores Branch.

Flying Officer A. G. S. Tuke is transferred to Stores Branch on probation (September 7).

Medical Branch.

Flight Lt. J. C. Osburne, M.B., is granted a permanent commn. in rank stated (September 30) ; A. F. Cook is granted a short service commn. as Flying Officer, for three years on active list, with effect from, and with seniority of September 16.

Reserve of Air Force Officers.

The following are granted commissions in Class AA., General Duties Branch, as Pilot Officers on probation :—A. N. Wells (September 15) ; J. A. Lincoln, L. R. Maffezzoni (September 21). Pilot Officer A. R. J. Savage is confirmed in rank (September 24) ; Flying Officer H. J. Ellam is transferred from Class A to Class C (May 23).

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified :—

General Duties Branch

Group Captain.—P. H. L. Playfair, M.C., to R.A.F. Depot, 1.9.25.

Wing Commander.—T. W. Mulcahy-Morgan, M.C., to H.Q., Egypt, for Personnel Staff duties, 22.9.25.

Squadron Leaders : R. S. Maxwell, M.C., D.F.C., to No. 47 Sqdn., Egypt. 22.9.25. F. H. Unwin, O.B.E., to No. 1 School of Tech. Training (Boys), Halton. 1.10.25. Sir C. J. Q. Brand, K.B.E., D.S.O., M.C., D.F.C., to Air Ministry. 22.9.25. R. L. G. Marix, D.S.O., to H.Q., Mediterranean. 24.9.25.

Flight Lieutenants : L. J. St. G. Bayly, M.C., to No. 99 Sqdn., Bircham Newton ; 1.10.25. A. S. Cheshire, M.B.E., to Electrical and Wireless School, Flower Down ; 28.9.25. D. R. W. Thompson, to No. 3 Group H.Q., Spittlegate ; 1.10.25. The Hon. J. H. B. Rodney, M.C., to No. 24 Sqdn., Kenley ; 10.10.25. E. J. Kingston-McCloughry, D.S.O., D.F.C., to Air Ministry ; 23.9.25. S. N. Cole, H. J. Roach, A.F.C., G. F. Smylie, D.S.C., S. D. Culley, D.S.O., L. G. Harvey, J. C. Foden, A.F.C., H. I. T. Beardsworth, S. M. Park, and D. L. Evans, M.C., D.F.C., all to Inland Area Aircraft Depot, Henlow ; 19.9.25. Hon. J. H. B. Rodney, M.C., to H.Q. Spec. Res. and Auxiliary A.F., instead of to No. 24 Sqdn., as previously notified ; 1.10.25. E. R. Whitehouse, to No. 45 Sqdn., Iraq ; 22.9.25. A. S. Ellerton, O.B.E., and A. A. Ward, to No. 6 Armoured Car Coy., Iraq ; 22.9.25. R. S. Sugden, A.F.C., and G. E. Ranson, to No. 55 Sqdn., Iraq ; 22.9.25. N. V. Wrigley and L. H. Cockey, to H.Q., Iraq ; 22.9.25. S. S. Benson, A.F.C., W. V. Simons, and T. C. Traill, D.F.C., to Aircraft Depot, Iraq ; 22.9.25. E. K. D. Robertson, A.F.C., to No. 84 Sqdn., Iraq ; 22.9.25. F. C. B. Savile, to No. 70 Sqdn., Iraq ; 22.9.25. E. P. Mackay, to No. 8 Sqdn., Iraq ; 22.9.25. M. M. Freehill, D.F.C., to No. 5 Armoured Car Coy., Iraq ; 22.9.25.

Flight Lieutenants : E. B. Mason and J. H. Green, to No. 208 Sqdn., Egypt. 22.9.25. H. P. G. Leigh, to Engine Repair Depot, Egypt. 22.9.25. G. G. Walker, M.C., to No. 4 Flying Training Sch., Egypt. 22.9.25. K. E. Ward, to R.A.F. Base, Calshot. 14.9.25. P. E. Maitland, A.F.C., to R.A.F. Depot, on transfer to Home Estab. 18.9.25. R. V. Goddard, to R.A.F. Depot. 14.9.25. D. Craik, D.F.C., to No. 24 Sqdn., Kenley, 24.9.25. R. L. Sweeny, to R.A.F. Depot. 8.10.25. E. Burton, to Inland Area Aircraft Depot, Henlow. 28.9.25.

Flying Officers : H. J. Saker, to No. 58 Sqdn., Worthy Down ; 1.10.25. J. R. D. Goadsby, to Marine Aircraft Experimental Establishment, Felixstowe ; 5.10.25. R. G. Chapell, to No. 100 Sqdn., Spittlegate ; 24.9.25. R. A. Seaton, to No. 24 Sqdn., Kenley, on appointment to a Short Service Commission ; 2.9.25. H. N. Hawker and C. R. Mason, to No. 24 Sqdn., Kenley, on appointment to a Short Service Commission ; 14.9.25. E. H. Rundle, to Air Ministry ; 5.8.25. H. H. Storrs, to No. 24 Sqdn., Kenley, 17.9.25. J. H. Page, to No. 2 Flying Training Sch., Digby ; 21.9.25. (Hon. Flight-Lieut.) A. E. G. Forrest, to Sch. of Tech. Training (Men), Manston ; 21.9.25. J. St. C. Arbuthnott, to No. 5 Flying Training Sch., Sealand, on appointment to Short Service Commission ; 12.9.25. A. Jerrard, V.C., E. J. Ffoulkes-Jones, and V. Croome, to Inland Area Aircraft Depot, Henlow, 19.9.25. P. N. R. Hallward, to No. 5 Flying Training Sch., Sealand, on appointment to temporary commission on being seconded from Army ; 12.9.25 H. C. Pyper, F. Porter, and C. D. Adams, to H.Q., Iraq ; 22.9.25. R. de L. Stedman, to No. 5 Armoured Car Coy., Iraq ; 22.9.25. S. H. Ware, to Stores Depot, Iraq ; 22.9.25. H. J. Gemmel, G. H. Jennings-Bramley, and H. T. R. Cripps, to No. 6 Sqdn., Iraq ; 22.9.25. T. C. Penna, F. W. Sinclair, D.F.C., A. M. Webster, and J. W. White, to Aircraft Depot, Iraq ; 22.9.25. W. Dickison, D.S.M., to Inland Water Transport, Iraq ; 22.9.25. J. E. Buckland, to No. 4 Armoured Car Coy., Iraq ; 22.9.25. M. W. J. Boxall and L. S. Potter, to No. 45 Sqdn., Iraq ; 22.9.25. E. B. Forster and R. B. H. Jackson, to No. 55 Sqdn., Iraq ; 22.9.25. (Hon. Flight-Lieut.) W. F. Humphery, and J. A. Moore, to No. 30 Sqdn., Iraq ; 22.9.25. R. S. Barbour, to No. 8 Sqdn., Iraq ; 22.9.25. G. S. White to No. 70 Sqdn., Iraq ; 22.9.25.

Flying Officers : G. H. Stainforth, R. N. Waite, and C. C. Edwards, to No. 4 Flying Training Sch., Egypt. 22.9.25. T. B. Prickman, to No. 14 Sqdn., Palestine. 22.9.25. B. C. Duke, to No. 1 Sch. of Tech. Training (Boys), Halton. 30.9.25. D. S. Brookes, to Station H.Q., Kenley. 5.10.25. O. B. Swain, to Station H.Q., Spittlegate. 21.9.25. A. C. Adams, to R.A.F. Depot, on transfer to Home Establ. 12.9.25. H. J. Hunter, to No. 1 Stores Depot, Kidbrooke, on transfer to Home Estab. 18.9.25.

Pilot Officers :—H. R. F. Baxter, to No. 58 Sqdn., Worthy Down ; 25.9.25 C. J. Pavia, to remain at R.A.F. Depot, instead of to No. 5 Flying Training Sch., as previously notified. A. W. L. C. Allen, H. T. Andrews, L. C. Barling, J. W. Bayes, G. Bradbury, A. M. N. David, W. G. du Be'Dat, T. O'N. East, D. C. Field, C. S. Horne, H. A. Howes, W. F. Lovering, C. V. Mossman, C. R. McEvoy, R. C. H. Monk, E. G. L. Russell, A. W. Shaw, W. H. Shorter, A. A. Smart, E. A. Swiss, A. E. Taylor, E. M. Thompson, and F. B. G. Walker, all posted to No. 5 Flying Training School, Sealand, on appointment to Short-Service Commissions : 12.9.25. J. H. C. Wake, to Inland Area Aircraft Depot, Henlow ; 19.9.25 ; D. T. H. Hooke, to R.A.F. Depot, on transfer to Home Estab. ; 5.9.25. W. E. Gray, to No. 47 Sqdn., Egypt ; 5.9.25. A. J. Thompson, to No. 47 Sqdn., Egypt ; 31.8.25. D. L. Kavanagh, J. H. Leach, S. A. Thorn and D. G. K. Walker, to No. 5 Flying Training Sch., Sealand, on appointment to Short Service Commns. (on probation) ; 21.9.25. J. C. C. Slater, to No. 5 Flying Training Sch., Sealand, on appointment to a Permanent Commn. ; 12.9.25. N. A. West, to No. 84 Sqdn., Iraq ; 22.9.25. W. O. Du Port and S. H. V. Harris, to No. 55 Sqdn., Iraq ; 22.9.25.

Pilot Officers : F. W. Moxham and H. E. Nowell, to No. 208 Sqdn., Egypt. 22.9.25. V. G. H. Gee, to No. 4 Flying Training Sch., Egypt. 22.9.25. R. F. Francis and W. E. Nicholls, to Sch. of Naval Co-operation Lee on Solent. 15.9.25. J. C. H. Tavendale, to No. 5 Flying Training Sch., Sealand, on appointment to a Permanent Commn. 12.9.25. C. F. C. Coaker and R. F. Findlay, to Central Flying School, Upavon, on appointment to permanent commissions. 26.9.25. The following pilot officers are all posted to Central Flying School, Upavon, on appointment to short-service commissions, with effect from 26.9.25.—W. A. Andrews, W. E. Barnes, J. Blackmore, W. G. Campbell, G. C. Crackanthorpe, H. C. G. Dauncey, J. M. Hunter, J. F. Lawn, H. G. Loch, W. C. McNeil, L. H. Mason, T. F. Moloney, C. M. Peabody, R. T. Read, G. L. C. Richmond, J. T. Riggs, L. G. Rumsey, E. T. M. Smalley.

Stores Branch.

Flight Lieutenant.—E. A. Tottle, to Air Ministry. 22.9.25.

Flying Officers :—R. W. Stewart, to No. 3 Stores Depot, Milton ; 5.10.25. W. H. Harrison and G. J. Maygothling, to Aircraft Depot, Iraq ; 22.9.25. J. R. Gardiner, to No. 4 Armoured Car Coy., Iraq ; 22.9.25. L. J. V. Bates, to No. 30 Sqdn., Iraq ; 22.9.25. A. J. Cox, M.B.E., to Stores Depot, Iraq ; 22.9.25. C. Littlejohn, M.M., to No. 55 Sqdn., Iraq ; 22.9.25. J. Davison to No. 45 Sqdn., Iraq. ; 22.9.25.

Flying Officers : T. L. Grey, to R.A.F. Depot, on transfer to Home Establ. 12.9.25. R. W. Stewart, to H.Q. Inland Area, instead of to No. 3 Stores Depot, as previously notified. 5.10.25.

Accountant Branch

Flying Officers : R. C. Clayton, to H.Q., Transjordan ; 22.9.25. H. A. Murton, to No. 4 Armoured Car Co., Iraq ; 22.9.25. F. C. Warner, to No. 84 Sqdn., Iraq ; 22.9.25. W. R. Donkin, to Aircraft Depot, Iraq ; 22.9.25.

Legal Branch

Squadron Leader E. St. C. Harnett, O.B.E., to H.Q., Iraq ; 22.9.25.

Medical Branch

Wing Commander H. W. Scott, to R.A.F. Brit. Hospital, Iraq ; 22.9.25.

Squadron Leader F. C. Cowtan, to R.A.F. Depot ; 30.10.25.

Flight Lieutenants : H. McW. Daniel, M.D., to H.Q., Iraq ; 22.9.25. J. K. Landells, M.B., to R.A.F. Brit. Hospital, Iraq ; 22.9.25. D. McLaren, M.B., to H.Q., Egypt ; 5.9.25. M. J. O'Reilly, to H.Q., Egypt ; 22.9.25.

Flight Lieutenants (Dental) : S. A. McCormack and P. P. Hogan, to H.Q., Iraq ; 22.9.25.

Flight Lieutenants (Q.Mstr. Medical) : W. P. Conolly, to R.A.F. Brit. Hospital, Iraq ; 22.9.25. E. Bennett, to Stores Depot, Iraq ; 22.9.25.

Flying Officers : H. W. Corner, M.B., to Basrah Combined Hospital, Iraq ; 22.9.25. J. Parry-Evans, H. C. Patterson, F. L. White, and B. Pollard, to H.Q., Iraq ; 22.9.25. G. J. Hanly, M.B., to R.A.F. Depot ; 29.9.25. R. J. K. Chattey, to Research Lab. and Med. Officers' Sch. of Instruction, Hampstead, on appointment to a short service commission ; 28.9.25.

NAVAL APPOINTMENTS

The following appointments were made by the Admiralty on September 29 :—

Royal Air Force

Flying Officers : F. W. W. Wilson, to No. 462 (F. Torpedo) Flight. A. P. Revington and H. W. Allen, to R.A.F. Base, Gosport, supernumary, for flying duties ; 28.9.25.

Lieut., Royal Marines (Flying Officer, R.A.F.) J. M. Fuller, to *Furious* and for No. 421 (F. Spotter) Flight, supernumary, for final deck-landing training ; 23.9.25.

FLIGHT

ROYAL AIR FORCE

Revised Rates of Pay of New Entrants

THE Air Ministry announces that revised rates of pay have been approved for officers of ranks up to and including Flight Lieutenant in the General Duties Branch of the Royal Air Force and Royal Air Force Reserve as follows :—

Rank.	Standard rate.	Current rate.*
	£ s. d.	£ s. d.
Pilot Officer	0 16 0	0 15 2
Flying Officer on promotion	1 0 0	0 18 10
,, ,, after two years	1 3 0	1 1 8
Flight Lieutenant on promotion ..	1 6 0	1 4 6
,, ,, after two years ..	1 8 0	1 6 6

These rates will be applicable to officers commissioned or recommissioned in the General Duties Branch of the Royal Air Force or Royal Air Force Reserve on or after October 1, 1925 ; they will not be applicable to officers commissioned before that date during the currency of their existing commissions. Detailed regulations as to the application of these revised rates will shortly be issued. The rates of half-pay of officers to whom the above rates of full pay apply have been revised. Revised rates of pay have also been approved for airmen of the Royal Air Force and Royal Air Force Reserve as shown in the attached tables. These rates will be applicable to airmen enlisted or re-enlisted on or after October 1, 1925, but not to airmen who enlisted before that date. Detailed regulations will shortly be issued.

TABLE I

Pay of Airmen, Groups I to IV.—New Daily Rates

Rank.	Group I	Group II	Group III	Group IV	Group V
	s. d.	s. d.	s. d.	s. d.	s. d.
Aircraftman, 2nd class	3 6	3 3	2 6	3 0	2 0
Do., over 1 yr.	—	—	—	—	2 6
Aircraftman, 1st Class	4 3	4 0	3 3	3 9	2 9
Leading Aircraftman ..	5 6	5 0	4 0	4 6	3 3
Do., over 3 yrs.	6 0	5 6	4 6	5 0	3 9
Corporal	7 6	6 6	5 0	5 6	4 3
Do., over 4 yrs.	8 0	7 0	5 6	6 0	4 9
Sergeant	9 6	8 6	6 6	7 0	6 0
Do., over 4 yrs.	10 0	9 0	7 0	7 6	6 6
Sergeant (pilot) ..	12 6	11 6	9 6	10 0	—
Do., over 4 yrs.	13 6	12 6	10 6	11 0	—
Flight Sergeant ..	11 6	10 0	8 0	8 6	7 6
Do., over 4 yrs.	12 0	10 6	8 6	9 0	8 0
Flight Sergeant (pilot)	15 0	13 6	11 6	12 0	—
Do., over 4 yrs.	15 6	14 0	12 0	12 6	—
Sergeant - Major, 2nd Class ..	New rates are under consideration, and will be announced later.				
Sergeant - Major, 1st Class					

TABLE II

Pay of Airmen, Medical Branch—New Daily Rates

Rank.	Group A	Group B	Group C
	s. d.	s. d.	s. d.
Aircraftman, 2nd Class ..	3 3	3 0	2 9
Do., over 3 years	4 3	4 0	3 9
Aircraftman, 1st Class ..	3 9	3 6	3 3
Do., over 3 years	4 9	4 6	4 3
Leading Aircraftman ..	4 3	4 0	3 9
Do., over 3 years	5 3	5 0	4 9
Corporal	5 6	5 3	5 0
Do., over 2 years	6 3	6 0	5 9
Sergeant	7 3	7 0	6 9
Do., over 2 years	8 0	8 0	8 0
Flight Sergeant	9 6	9 6	9 6
Sergeant Major, 2nd Class Sergeant Major, 1st Class	New rates are under consideration and will be announced later.		

TABLE III

Pay of Aircraft Apprentices and Apprentice Clerks—new daily rates.

—	Aircraft Apprentices	Apprentice Clerks
	s. d.	s. d.
First year	1 0	1 0
Second year	1 0	1 6
Afterwards†	1 6	1 6

* Standard rate adjusted with reference to cost of living.

† That is, from the end of the second year until the aircraft apprentice or apprentice clerk has both attained the age of 18, and either has been posted to a unit for duty as an aircraft man after the completion of training or, if selected for an advanced course with a view to promotion to the rank of corporal, has commenced the advanced course. Aircraft apprentices and apprentice clerks, if enlisted after September 30, 1925, will not, as under the regulations before their modification by this Order, be eligible for pay at the rate for aircraftmen, Group V, on reaching the age of 18.

◈ ◈ ◈ ◈

AUXILIARY AIR FORCE

Commissioned Officers Required for New Squadrons

THE Air Ministry announces that arrangements have now been completed for the establishment, this year, of the first four squadrons of the new Auxiliary Air Force. These units, which will form part of the Home Defence Force, will be raised and administered by the Territorial Army and Air Force Associations in the respective districts. With the exception of a small nucleus of regular personnel each Auxiliary Air Force Squadron will be composed of non-Regular officers and airmen, the personnel being drawn from the vicinity of the city or town at which the units are centred.

The squadrons forming immediately are :—

No. 600. City of London (Bombing) Squadron.
No. 601. County of London (Bombing) Squadron.
No. 602. City of Glasgow (Bombing) Squadron.
No. 603. City of Edinburgh (Bombing) Squadron.

The following appointments have already been made :—

Squadron Leader Lord E. Grosvenor to command No. 601 County of London (Bombing) Squadron.

Squadron Leader J. McKelvie, A.F.C., to command No. 603 City of Edinburgh (Bombing) Squadron.

Squadron Leader C. N. Lowe, M.C., D.F.C., to command temporarily No. 602 City of Glasgow (Bombing) Squadron.

Each squadron will be provided with training machines, and later with the full scale of bombing aircraft allowed for a normal regular squadron. These will be housed at the squadron aerodrome, which will be equipped with the necessary workshops and technical accommodation. At these aerodromes the normal flying training will be carried out, but each squadron will also have an allotted war station within the defence system.

In order to assist ground training, each unit will be provided with town headquarters, where training and technical instruction will be carried out. The town headquarters will, in addition, provide social facilities, similar to those existing at Territorial Army units.

The two London units will, for the present, carry out their flying training at Northolt Aerodrome ; the Glasgow Squadron will be located at Renfrew Aerodrome, and the Edinburgh one at Turnhouse. All these aerodromes were in occupation during the war.

The date on which recruiting of airmen for each unit will be opened will be announced later, but the County Associations are now prepared to receive applications from gentlemen who wish to be considered for commissions in the new units. Although the regulations permit commissions to be granted to gentlemen who are already qualified pilots, it is the intention to fill the commissioned ranks, with the exception of the senior appointments, from amongst candidates who have had no Service flying experience. In deciding upon

this policy, the Air Ministry has been influenced by two reasons—first, that qualified pilots can join the pilots' section of the Reserve of Air Force Officers, and, secondly, that in endeavouring to obtain those who are without flying experience, an opportunity is given which should bring about a more widespread acquaintance with flying, and so broaden the basis on which the Air Force is built.

Applicants for commissions as Pilot Officers should be between 18 and 25. Candidates, who are found on interview to be suitable, will be required to produce a Licence "A" certificate before being granted commissions. If not already in possession of Licence "A" candidates must obtain it at their own expense after being provisionally selected for a commission. If they graduate successfully they will, however, be refunded their actual tuition expenses up to a sum, at present £96, which is considered to be the likely cost to an average candidate.

Candidates must engage in the first instance for five years' service. After qualifying as pilot, officers of the Auxiliary Air Force will be required to fly a few hours every quarter and to attend annual training for 15 days.

Candidates can obtain full information from the Secretaries of the Territorial Army and Air Force Associations at the undermentioned addresses, and from the Air Officer Commanding, Special Reserve and Auxiliary Air Force, 145, Sloane Street, Sloane Square, S.W.1.

The Secretary, City of London Territorial Army and Air Force Association, 39, Finsbury Square, E.C.2.

The Secretary, County of London Territorial Army and Air Force Association, Duke of York's Headquarters, Chelsea, S.W.3.

The Secretary, City of Glasgow Territorial Army and Air Force Association, 201, West George Street, Glasgow.

The Secretary, City of Edinburgh Territorial Army and Air Force Association, 8, Wemyss Place, Edinburgh.

* * * *

The Royal Air Force Memorial Fund

THE usual meeting of the Grants Sub-Committee was held at No. 7, Iddesleigh House, October 1. Lieut.-Comdr. H. E. Perrin was in the chair, and the other members of the committee present were:—Mr. Walter S. Field, Sqdn.-Ldr. E. B. Beauman. The committee considered in all 22 cases, and made grants to the amount of £117 7*s*. 8*d*. The next meeting was fixed for Thursday, October 15, at 2.30 p.m.

Royal Aero Club Schneider Cup Fund

IN addition to the donations received by the Royal Aero Club towards the expenses of sending out the British team—a list of which was given in last week's issue of FLIGHT—a further £300 has been received from Sir Charles Wakefield, Bart.

R.A.F. Golf Championship

FOR the fourth year in succession Squadron-Leader C. H. Hayward won the Royal Air Force Golf Championship at Camberley Heath on September 30. He beat Lieut. Fawcus in the final round by 7 up and 6 to play. Other competitions were also held, with the following results:—

Stroke Round (Senior).—Squadron-Leader Lowe, 81 − 3 = 78; Squadron-Leader C. H. Hayward, 77 + 2 = 79; Squadron-Leader Smith, 87 − 8 = 79. *Junior.*—Wing Commander Barratt, 83 − 11 = 72; Flight-Lieut. Whittaker, 94 − 16 = 78; Flight-Officer Fulford, 98 − 18 = 80.

Scratch Prize.—Squadron-Leader C. H. Hayward, 77; Squadron-Leader Lowe, 81; Flight-Lieut. E. A. Fawcus, 82.

Foursomes.—Flight-Lieut. Whittaker and Flight-Lieut Cooke, 87 − 13 = 74.

The Lyons Congress and Aerial Insurance

THE Congress at Lyons, opened on September 28 with the object of dealing with juridical questions in connection with aviation, has drawn up a text embodying the following points:—Article 1.—Aircraft may be insured up to their total value against all risks, with the exception of those intentionally caused by the person insured or by the pilot. Article 2.—Insured aircraft may be abandoned to the underwriters or assurers in case of damage amounting to three-quarters of the value insured, or in case of loss, after no news has been received for a period of three months.

Gee Whizz!

IT is reported from New York that photographs were taken from an aeroplane of the Fort Leavenworth army barracks, were developed in the air, dropped to the ground, and transmitted by wire to New York, Chicago and San Francisco—all within 30 minutes!

The Tokyo-London Flight

THE Royal Aero Club and the Society of British Aircraft Constructors are giving a luncheon to the Japanese aviators, Capt. Abe and Mr. Kawachi, on Tuesday next, October 13, at the Savoy Hotel at 1 o'clock. Members of either body wishing to attend should apply to the Secretary of the Royal Aero Club. Tickets (inclusive), 1 guinea each.

"Bristol" Success in Germany

IN the recent German flying race "around Saxony" an Albatros L.69 monoplane, piloted by Herr Student, and fitted with a Bristol "Lucifer" engine, won first prize. The Albatros Company have informed the Bristol Aeroplane Company that the "Lucifer" required no attention of any kind throughout the competition.

Fleet Air Arm Badge

IT has been decided by the Admiralty, with the approval of the King, that officers of the Royal Navy and officers of the Royal Marines attached to the Royal Air Force for service in the Fleet Air Arm shall wear a badge composed of a silver anchor and cable of silver embroidery surrounded by a laurel wreath of silver embroidery, superimposed on the wings of an albatross in gold embroidery. The badge will be worn by Naval officers in the centre of the left sleeve, and by Royal Marine officers on the left forearm. Royal Air Force officers of the Fleet Air Arm will wear a badge composed of a small silver anchor and cable of silver embroidery surrounded by a laurel wreath in gold embroidery. The badge will be worn in accordance with the directions issued by the Air Ministry weekly order of September 10.

* * * *

PUBLICATIONS RECEIVED

Annual Report on the Progress of Civil Aviation (April 1, 1924-March 31, 1925). Air Ministry: Directorate of Civil Aviation. H.M. Stationery Office, Kingsway, London, W.C. Price 2*s*. net.

Aeronautical Research Committee, Reports and Memoranda: No. 957 (Ae. 176).—Experiments on the Transmission of Air Waves through Pipes. By L. F. G. Simmons and F. C. Johansen. January, 1925. H.M. Stationery Office, Kingsway, London, W.C. 2. Price 1*s*. net.

The Poetry of Flight. An Anthology. Edited by Stella Wolfe Murray. Heath Cranton, Ltd., 6, Fleet Lane, London, E.C.4. Price 7*s*. 6*d*.

Broadcast. By John Mackworth. Longmans, Green and Co., Paternoster Row, London, E.C. Price 7*s*. 6*d*. net.

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AERONAUTICAL PATENT SPECIFICATIONS

***Abbreviations*: Cyl. = cylinder; i.c. = internal combustion; m. = motor. The numbers in brackets are those under which the Specifications will be printed and abridged, etc.**

APPLIED FOR IN 1924.

Published October 8, 1925.

8,620. R. J. C. TAMPIER. Liquid-level indicators. (224,198.)
11,294. AIRSHIP GUARANTEE CO., LTD., and C. D. BURNEY. Gas containers, flexible gas storage chambers, etc. (239,569.)
14,241. AIRSHIP GUARANTEE CO., LTD., and B. N. WALLIS. Airships. (239,601.)
17,780. P. DAIMLER and F. LINCK. I.c. engines. (239,657.)
18,943. W. E. ARMSTRONG. Control of aeroplanes in the direction of flight. (239,673.)
20,291. A. L. DAVIS. Aircraft lamps. (239,688.)

APPLIED FOR IN 1925.

Published October 8, 1925.

9,972. E. PISTOLESI. Control device for variable-pitch propeller. (239,801.)

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